

REPORT DOCUMENTATION PAGE		1. REPORT NO. JPRS 74785	2.	3. Recipient's Accession No.
4. Title and Subtitle WORLDWIDE REPORT: NUCLEAR DEVELOPMENT AND PROLIFERATION, No. 22			5. Report Date 18 December 1979	
7. Author(s)			6.	
9. Performing Organization Name and Address Joint Publications Research Service 1000 North Glebe Road Arlington, Virginia 22201			8. Performing Organization Rep. No.	
12. Sponsoring Organization Name and Address As above			10. Project/Task/Work Unit No.	
			11. Contract(C) or Grant(G) No. (C) (G)	
			13. Type of Report & Period Covered	
			14.	
15. Supplementary Notes				
16. Abstract (Limit: 200 words) This serial report contains worldwide press and radio coverage of nuclear research programs; technical indicators of nuclear capabilities; production capability; construction and purchase of nuclear facilities; status of uranium and thorium supplies; level of technology in high explosives and advanced munitions; government and nongovernment attitudes on nuclear-related topics; international agreements for nuclear cooperation; transfer of technology; personalities, organizations, equipment and facilities.				
17. Document Analysis a. Descriptors WORLDWIDE Nuclear Proliferation Nuclear Development Uranium Thorium Technology				
b. Identifiers/Open-Ended Terms				
c. COSATI Field/Group 18				
18. Availability Statement Unlimited Availability Sold by NTIS Springfield, Virginia 22161			19. Security Class (This Report) UNCLASSIFIED	21. No. of Pages 100
			20. Security Class (This Page) UNCLASSIFIED	22. Price

18 December 1979

WORLDWIDE REPORT
NUCLEAR DEVELOPMENT AND PROLIFERATION
No. 22

CONTENTS	PAGE
WORLDWIDE AFFAIRS	
Pakistan Envoy Denies Diversion of Uranium From Niger (Niamey Domestic Service, 15 Nov 79).....	1
USSR Asks Austria for Payment for Nonfulfillment of Nuclear Contract (Herbert Hutter; Vienna Domestic Service, 2 Nov 79).....	2
Israeli General Visits RSA; Closer Nuclear Cooperation Seen (TASS, 12 Nov 79).....	3
Indian Commentator Speculates on U.S. Role in South African N-Blast (Mahendra Kumar; Delhi General Overseas Service, 28 Nov 79).....	4
Briefs French Uranium Prospecting in Indonesia	6
ASIA	
INTER-ASIAN AFFAIRS	
Two Australian Companies To Sell Uranium to ROK (AFP, 9 Nov 79).....	7
FRENCH POLYNESIA	
Briefs Nuclear Testing Security	8

CONTENTS (Continued)**Page****JAPAN**

Nuclear Power Plant Reactors Shut Down, Checks To Be Made (KYODO, 3, 4 Nov 79).....	9
--	----------

**Takahama Plant
Fukushima Plant
Inspection Planned**

Briefs

Protest Over Plant Operation	11
Softened Stand of SOHYO Leader	11
Resumed Operation	12

PAKISTAN

Status, Consequences of Atom Bomb Project (DER SPIEGEL, 12 Nov 79).....	13
--	-----------

PHILIPPINES

Marcos Announces Problems With Nuclear Powerplant (AFP, 13 Nov 79).....	15
--	-----------

SOUTH KOREA**Briefs**

9th, 10th Nuclear Plants	16
2nd, 3rd Nuclear Plants	16
Nuclear Powerplants	17

EAST EUROPE**INTERNATIONAL AFFAIRS****Briefs**

Hungary-USSR Nuclear Agreement	18
---------------------------------------	-----------

CZECHOSLOVAKIA

Nuclear Powerplants Defended; Further Production Planned (CTK, 13 Nov 79).....	19
---	-----------

CONTENTS (Continued)**Page**

Nuclear Power Essential to Nation (Jan Subert; ZEMEDELSKI NOVINY, 20, 27 Oct 79).....	20
--	----

Atom Is Only Solution
Nuclear Power the Safest Industry

HUNGARY

Paks Nuclear Power Plant To Differ in Security From Predecessors (Sandor Baranya; MUSZAKI ELET, 2 Nov 79).....	26
--	----

YUGOSLAVIA

Briefs Second Nuclear Powerplant	28
-------------------------------------	----

LATIN AMERICA**ARGENTINA**

Development, Research on Nuclear Industrial Technology Reported (LA PRENSA, 7 Nov 79).....	29
--	----

Nuclear Science Conference
Admiral Addresses Conference
Research, Production
Ventilation, Airconditioning
Civil Engineering Requirements
Construction Work Details
Power-Generating Equipment
High-Technology Components
Parallel Power Plant Project
Program Equipment and Training
Power Plant Airconditioning System
Material Supply, Assembly
Basic Parts Production

Ambassador to FRG Denies 'Conditioning' of Nuclear Agreement (TELAM, 12 Nov 79).....	50
--	----

Madero Reports to Videla on Atucha II Negotiations (LA NACION, 17 Nov 79).....	51
---	----

CONTENTS (Continued)**Page**

Siemens, Martinez de Hoz Discuss Atucha II Reactor Deal (LA NACION, 20 Nov 79).....	52
Madero Presides Over Seminar on Nuclear Fuel (LA PRENSA, 20 Nov 79).....	53
Camillon: Nuclear Cooperation With Brazil a Possibility (LA PRENSA, 18 Nov 79).....	55

BRAZIL

Former Head of NUCLEI Criticizes Nuclear Accord With FRG (O ESTADO DE SAO PAULO, 26 Oct 79).....	56
NUCLEBRAS Criticized for Investing in Jet Nozzle Process (O ESTADO DE SAO PAULO, 23 Oct 79).....	59
Physicist Defends Jet Nozzle Enrichment Process (O ESTADO DE SAO PAULO, 23 Oct 79).....	61
Physicist Alleges Nazis Connected to FRG Nuclear Industry (O ESTADO DE SAO PAULO, 28 Oct 79).....	63
Uranium Reserves Set at 250,000 Tons (O GLOBO, 28 Oct 79).....	67
ELECTROBRAS Allegedly Not Planning New Nuclear Plants (JORNAL DO BRASIL, 1 Nov 79).....	68
Nuclear Agreement To Be Negotiated With Mexico (O GLOBO, 1 Nov 79).....	70
Itamaraty Spokesman Denies Nuclear Accord With Argentina (O ESTADO DE SAO PAULO, 30 Oct 79).....	72
South American Nuclear Common Market Advocated (O GLOBO, 25 Oct 79).....	73
Briefs Nuclear-Powered Ship	75

NEAR EAST AND NORTH AFRICA

EGYPT

- Alexandria Council Rejects Nuclear Powerplant
(AFP, 3 Nov 79)..... 76

SUB-SAHARAN AFRICA

INTER-AFRICAN AFFAIRS

- Briefs
Enriched Uranium Diverted 77

NIGER

- Government Denies Press Reports of Uranium Disappearance
(Niamey Domestic Service, 9 Nov 79)..... 78

USSR

- Academician Aleksandrov Discusses Nuclear Power in USSR
(Anatoliy Aleksandrov Interview; YA, 27 Oct 79)..... 80

WEST EUROPE

INTERNATIONAL AFFAIRS

- FRG To Cooperate in Building First Nuclear Power Station
(Ankara Domestic Service, 14 Nov 79)..... 83

FRANCE

- Barre Stresses Importance of Nuclear Power Industry
(Paris Domestic Service, 12 Nov 79)..... 84

- Nuclear Bombers To Be Deployed to Mediterranean
(LE FIGARO, 20 Oct 79)..... 85

NETHERLANDS

- Poll Reveals Dutch Fear Nuclear Energy
(ELSEVIERS WEEKBLAD, 20 Oct 79)..... 86

Population Polled
Opening of Coal Mines, by Jan van den Beld
Nuclear Energy: Last Resort, by Jan van den Beld

CONTENTS (Continued)

Page

SWITZERLAND

Nuclear Power Plant Goesgen Dynamited (NEUE ZUERCHER ZEITUNG, 6 Nov 79).....	93
---	-----------

PAKISTAN ENVOY DENIES DIVERSION OF URANIUM FROM NIGER

AB151345 Niamey Domestic Service in French 1200 GMT 15 Nov 79 AB

[Text] The president of the Supreme Military Council and head of state, Col Seyni Kountche, this morning received the Pakistani charge d'affaires in Niger, His Excellency Said Khalid. After the audience, the Pakistani diplomat kindly told us the nature of his discussions with the head of state. [begin recording]

[Khalid] The audience which the head of state kindly granted me enabled us to survey the friendly and fraternal relations existing between Niger and Pakistan. I also took this opportunity to congratulate the head of state on Niger's election to the United Nations Security Council.

I informed him that the news of Niger's election to the Security Council was very warmly received by Pakistan.

[Question] There have been rumors of the diversion of uranium cargoes to Pakistan. What are the facts?

[Answer] As you know, the Niger Government has already formally denied these rumors. I assure you that they are completely false and without any foundation and that this is an attempt to scandalize our countries. [end recording]

CSO: 5100

WORLDWIDE AFFAIRS

USSR ASKS AUSTRIA FOR PAYMENT FOR NONFULFILLMENT OF NUCLEAR CONTRACT

AU021748 Vienna Domestic Service in German 1700 GMT 2 Nov 79 AU

[Article by Herbert Hutter]

[Summary] "A delegation of the Soviet state uranium foreign trade corporation is now visiting Vienna. The Soviets want \$18 million from Austria's electric power industry, which is more than 230 million schillings. The reason for this: Agreements on the enrichment of uranium were concluded with the Soviet Union for the second nuclear power plant at the mouth of the Enns River which had disappeared from the plans of the electric power industry a long time before the Zwentendorf referendum, agreements which the Austrians naturally cannot keep now because of the referendum of 5 November 1978.

"Obviously nobody was found who could have purchased from the Austrians the uranium refined from crude uranium into nuclear power fuel in the Soviet Union. The Soviets emphasize that factories were built for the production of the Austrian nuclear power fuel, plants which are now useless. The outcome of the negotiations is uncertain, but the Soviets are likely to turn out to be tough partners.

The Tullnerfeld power plant corporation responsible for Zwentendorf still has problems. It still has an enrichment contract with the Americans in effect. Indemnification payments in the case of nonfulfillment of this contract would total up to 200 million schillings. The Americans have not yet leveled any final claims for indemnification, however.

CSO: 5100

ISRAELI GENERAL VISITS RSA; CLOSER NUCLEAR COOPERATION SEEN

LD130428 Moscow TASS in English 1452 GMT 12 Nov 79 LD

[Text] Maputo, November, 12 TASS--The Republic of South Africa and Israel are closely cooperating in the development of nuclear arms. A new indication of this dangerous cooperation is the visit of retired Major General A. Horev, president of the Israeli Politechnical Institute, to South Africa. The institute maintains direct contacts with the Israeli Defence Ministry in which A. Horev was concerned until recently with the development of missile-nuclear weapons of mass destruction.

It is reported from Johannesburg that the purpose of his visit is to learn about South Africa's latest achievements in the development and manufacture of arms, including nuclear ones. While in South Africa A. Horev is to visit the national atomic research center in Pelindaba, the nuclear installation in Valindaba, the nuclear complex which is under construction in Keberga and the naval base in Simonstown.

In the opinion of political observers, this visit marks the beginning of a more active stage of cooperation between Zionist Israel and the racist South African regime in the military field, (especially in) the development of nuclear weapons. Building up their nuclear potential with the assistance of the USA and its NATO allies, Tel Aviv and Pretoria seek to use these arms for blackmailing independent states and the (national liberation) movements in the Middle East and Africa.

CSO: 5100

WORLDWIDE AFFAIRS

INDIAN COMMENTATOR SPECULATES ON U.S. ROLE IN SOUTH AFRICAN N-BLAST

BK281108 Delhi General Overseas Service in English 1010 GMT 28 Nov 79 BK

[Station commentary by Mahendra Kumar]

[Text] Thinking of the countries which have the atom bomb and the policy of nonproliferation adopted by them, one is reminded of the very familiar scene at an Indian railway station. Those who are inside a crowded railway carriage do their best to prevent anybody else to enter it. If, however, somebody happens to enter, he also joins the crowd already inside the carriage to shut out all others. This is the attitude of the nuclear club also, to which the latest entrant seems to be South Africa.

This country will also join other members of the club in denying nuclear technology to any other country even for peaceful purposes. This analogy does not, however, apply to South Africa because no effort seems to have been made to shut it out. The report that South Africa seems to have exploded an atom bomb came from the United States. On October 25, the State Department announced that it was assessing evidence that a low-yield nuclear blast has occurred in a stretch of the Indian and South Atlantic Ocean area including southern Africa. On the basis of this report the main political committee of the UN General Assembly has passed a resolution condemning the explosion by South Africa. The occasion for passing this resolution was also unique. Since 1961 the political committee, and later the General Assembly, has been passing every year a resolution to reiterate its demand that all states should cooperate in keeping Africa free of all nuclear weapons. Ironically, this year the political committee had to draw attention to the fact that South Africa had been bluntly and persistently refusing to renounce the acquisition of nuclear weapons. The committee had to express its alarm at the report that South Africa might have detonated a nuclear explosive device. The resolution has also called for action to prevent South Africa from further endangering international peace and security through its acquisition of nuclear weapons.

A number of questions emerge from the U.S. report and the political committee resolution. How is it that the United States is not able to confirm openly that South Africa has exploded a nuclear bomb? It has a number of

satellites continuously orbiting the earth which are fitted with the most sophisticated electronic devices capable to discover what is happening anywhere on the globe. If not at the earlier stages of developing the bomb, these devices could at least tell definitely when and where an atomic explosion has taken place. Moreover, as already mentioned, South Africa has always refused to cooperate in keeping the African continent free of atomic weapons. This should have been sufficient indication of what its intentions will always be. Was it not then the duty of the United States, which is not prepared to allow other countries to develop atomic technology even for peaceful purposes, to keep an eye on the activities of South Africa?

Another question is from where South Africa got the technology to prepare an atom bomb? Considering all these facts, it can very well be inferred that the Western powers which were throughout aware of South Africa's intention to possess an atom bomb had at least overlooked if not actually connived at or actively assisted in the development of the [nuclear] weapons by South Africa. The way the Western powers have continuously assisted South Africa as well as Rhodesia to flout all the resolutions of the United Nations also confirms this inference. The United Nations first imposed a voluntary embargo in 1960 and then a mandatory ban in November 1977 on supply of arms and ammunition and other vital materials like oil to South Africa. But these embargoes did not achieve any purpose. The reason was that the Western powers and some of the allies like Israel totally disregarded the ban and kept up the flow of oil, money and arms to South Africa. By assisting South Africa, they were also assisting Rhodesia. Their motive was clear; they wanted to preserve for themselves the natural resources and markets in these countries.

The resolution now passed by the main political committee is also certain to be passed by the General Assembly as the committee consists of all the members of the General Assembly. But the question is will it have any effect? Most probably it will also go the way past resolutions have gone because the countries which have connived at the development of the bomb by South Africa cannot be expected to cooperate in preventing it from building up a stockpile of these deadly weapons.

CSO: 5100

WORLDWIDE AFFAIRS

BRIEFS

FRENCH URANIUM PROSPECTING IN INDONESIA—Jakarta, 21 Oct (AFP)—French geologists assigned to uranium prospection in Kalimantan (Borneo) today concluded a ten-year mission to Indonesia without decisive results but scientific cooperation in the nuclear field continued to be active between France and Indonesia. The last expert from the French atomic energy agency (CEA, Commissariat a l'Energie Atomique) left Jakarta amid reports that uranium prospection in Kalimantan had yielded insufficiently for a profitable exploitation. Informed sources said uranium findings in east-central Kalimantan, where the French geologists were at work, were scattered deposits in remote areas with no communication means and no decision could be taken both by Indonesian and French authorities to embark in production. Despite poor results in mining cooperation, scientific cooperation was today reported to be going on between the CEA and its Indonesia counterpart BATAN in Bandung. Informed sources said French equipment for nuclear physics experiments was to be delivered soon to BATAN and several Indonesian technicians were being trained in French nuclear establishments. [Hong Kong AFP in English 0453 GMT 21 Oct 79 BK]

CSO: 5100

INTER-ASIAN AFFAIRS

TWO AUSTRALIAN COMPANIES TO SELL URANIUM TO ROK

OW090653 Hong Kong AFP in English 0642 GMT 9 Nov 79 OW

[Text] Canberra, Nov 9 (AFP)--The two commercial partners in the Ranger Uranium Project in the Northern Territory today announced the sale of 2,500 short tons of uranium concentrates to the Korea Electric Company between 1983 and 1992. The contracts, signed with the federal government's authority, are subject to government approval under the government's uranium export policy. They are the first since December 1972, when the Whitlam Labor Government refused to approve any new export contracts.

The deputy prime minister and minister for trade and resources, Mr Doug Anthony, said he welcomed the announcement by Electrolytic Zinc Company of Australasia Ltd. and Peko Wallsend Operations Ltd. Mr Anthony said there were other negotiations proceeding for the sale of Australian uranium at the moment.

"I expect that the 2,500 short tons that has been sold today will be only the first of several more contracts that will be obtained over the coming months," he added.

Mr Anthony said it was noteworthy that the first contracts to be signed for a number of years were with the Republic of Korea which had a requirement for a major expansion in electricity generation. "I am pleased that Australia is able to make an important contribution to Korea's energy requirements," he added.

Deliveries of the contracts, said to be worth about 180 million Australian dollars, will be under the terms of the bilateral safeguards agreement between Australia and South Korea which was signed in May this year. Mr Anthony said an essential feature of the agreement was to ensure that when Australia supplied uranium for peaceful purposes, it would not be diverted to non-peaceful or explosive uses.

CS0: 5100

FRENCH POLYNESIA

BRIEFS

NUCLEAR TESTING SECURITY—Papeete, Tahiti, Nov 8--Security is being increased at France's nuclear testing site at Mururoa Atoll in the South Pacific to prevent blasts setting off natural disasters and to shelter personnel, General Michel Rouyer, director of the test centres, announced here Wednesday. Drilling platforms similar to those used at sea by the oil companies are being built and could be in place at Mururoa in a year or two, he said. These rigs will make it possible to dig gun pits in the subsoil of the lagoon and no longer--as at present--in the atoll zone emerging from the sea. Risks of a landslide on the undersea slopes of Mururoa will be reduced, with firing taking place more in the centre of the basalt massif supporting the atoll, the general explained. He referred to accidents which took place there in July and in particular a big wave which followed one test. General Rouyer said that 20 million francs (about 5 million dollars) would be spent on stepping up security of personnel working on the site. He added that platforms of ample size would be constructed on the atoll in order to shelter personnel in the event of a cyclone or tsunami. [Text] [Hong Kong AFP in English 0113 GMT 8 Nov 79 OW]

CSO: 5100

JAPAN

NUCLEAR POWER PLANT REACTORS SHUT DOWN, CHECKS TO BE MADE

Takahama Plant

OW031147 Tokyo KYODO in English 0927 GMT 3 Nov 79 OW

[Text] Fukui Nov 3 KYODO--The No 2 reactor at the Takahama nuclear power plant was shut down Saturday after a large quantity of primary cooling water overflowed a leak-collecting tank inside the reactor. Initially, Kansai Electric Power Co, which operates the 826,000-kilowatt pressurized light-water reactor, said the reactor was shut down manually at 5:36 am after indications were found at 5:30 am that more than one ton of some 260 tons of primary cooling water had overflowed the catch vessel. However, the company said later it appeared 80 tons of radiation-contaminated water had leaked from the cooling system. It drained to a sump tank for collecting leaked water that has a capacity of 1.1 tons, filled an intervening space that can hold about 40 tons, and overflowed to a recirculating tank that can hold a similar volume. The floor of the reactor itself was not flooded, a spokesman said.

f. Fukui prefectural official said the overflow did not cause any environmental hazard at this point. However, the prefectural government planned to ask the company for a full investigation and report, because it was the biggest leak of primary cooling water from an atomic reactor within the prefecture.

By Saturday evening, Kansai Electric said the cause of the massive leak appeared due to a defect in temperature-monitoring piping. There are four monitoring pipes and one reserve pipe, the company explained, and it appeared the welded cap had fallen off the reserve outlet, allowing coolant water to gush out. The No 2 reactor, being warmed up after a routine checks on October 23, had been scheduled to return on line for commercial power generation in mid-November.

Fukushima Plant

OW040806 Tokyo KYODO in English 0713 GMT 4 Nov 79 OW

[Text] Tokyo Nov 4 KYODO--A reactor at the No 1 atomic power station run by the Tokyo Electric Power Co in Fukushima Prefecture automatically stopped operation early Sunday after developing trouble in the condenser pump, it was reported. According to a company spokesman here, the cause of the incident was unknown but there was no danger of radioactive leak from the 784,000-kilowatt boiling water reactor.

Inspection Planned

OWO40538 Tokyo KYODO in English 0506 GMT 4 Nov 79 OW

[Excerpts] Tokyo Nov 4 KYODO--The Natural Resources and Energy Agency has decided to conduct a detailed check to ascertain whether there is possibility of other nuclear power plants in Japan being hit by accidents similar to that at the Takahama plant in Fukui Prefecture of Kansai Electric Power Co. The agency sought a detailed report on the accident from Kansai Electric Power Co. It plans to make known details of the report to the Atomic Energy Safety Commission Monday.

Officials said this is the first time that some 80 tons of primary cooling water overflowed a leak-collecting tank inside a reactor. They said, however, no radioactivity leaked outside. The agency plans to conduct a thorough check into the cause of the accident and order the power company to take corrective measures, if necessary. The reactor of the pressurized water type has a output capacity of 826,000 kilowatts.

CSO: 5100

BRIEFS

PROTEST OVER PLANT OPERATION--Tokyo Nov 6 KYODO--The U.S. Government's continued moratorium on issuing construction and operating licenses for new nuclear power plants is likely to encourage popular movements against nuclear power plants in Japan. A leader of the Fukui prefectural residents conference against nuclear power plants voiced distrust in the Japanese Government for sticking to atomic power despite recent accidents at nuclear plants in the prefecture. Citing the American policy of safety first, a group seeking a moratorium on nuclear power plants also criticized the Japanese Government for resuming operation of nuclear power plants before completing thorough investigations into the accidents. However, Japan's nuclear safety commission intends not to emulate the U.S. policy in Japan for the time being. The Japanese commission, now studying a U.S. report on points to check for the safety of nuclear plants, says domestic reactors underwent similar checks immediately after the Three-Mile Island accident. The Ministry of International Trade and Industry and Natural Resources Agency also intend to allow Kansai Electric Power Co to operate the No 2 reactor at its Oi plant on schedule. But the U.S. moratorium is expected to influence discussions between local residents and administrative authorities on nuclear power plants in the future. [Text] [OW060851 Tokyo KYODO in English 0729 GMT 6 Nov 79 OW]

SOFTENED STAND OF SOHYO LEADER--Otsu, Shiga Pref, Nov 9 KYODO--Mitsuo Tomizuka, secretary general of the General Council of Trade Unions of Japan (SOHYO), softened his attitude toward nuclear power generation Thursday. In his keynote address to a three-day regional labor meeting, Tomizuka confirmed SOHYO's policy of rejecting nuclear power until its safety is insured, but admitted the significance of the 20 such facilities already in operation. SOHYO has demanded that the safety of nuclear power generation be guaranteed before it is undertaken, democratic procedures on siting plants be followed and related data be made public, but these demands have not yet been met, he said. Tomizuka proposed the reorganization of regional labor units into broader movements to demand a moratorium on operating existing nuclear reactors and building new ones. His partial turnaround is likely to arouse objections from the Japan Congress Against Atomic and Hydrogen Bombs (GENSUIKIN), an antinuclear civic organization backing SOHYO and the Japan Socialist Party (JSP), in coming session of the meeting. [Text] [OW090139 Tokyo KYODO in English 0030 GMT 9 Nov 79 OW]

RESUMED OPERATION—Tokyo Nov 8 KYODO--The second boiling-water reactor at Tokyo Electric Power Co's first nuclear power station in Fukushima prefecture resumed operation Thursday, 4 days after it was shut down due to an accident, the energy authorities announced. Operation of the 784,000 kilowatt nuclear generator was halted last Sunday after the pressure of the seawater in the condenser, a device to cool steam left after rotating the turbines and reduce it to ordinary water, fell to an abnormal level Sunday. The Natural Resources and Energy Agency said Thursday a loosened screw on the flow meter was the direct cause of the accident. Since the defective flow meter was replaced and no other defects were found, the agency permitted the company to bring the reactor back into operation, the agency said. [Text] [OW081109 Tokyo KYODO in English 1051 GMT 8 Nov 79 OW]

CSO: 5100

PAKISTAN

STATUS, CONSEQUENCES OF ATOM BOMB PROJECT

Hamburg DER SPIEGEL in German 12 Nov 79 pp 202-209

[Excerpts] A Pakistani atom spy in Holland, secret consignors who order parts in Europe for a uranium enrichment plant, a secret nuclear plant in Kahuta: Pakistan tries to build an A-bomb. India is already threatening countermeasures. An atomic arms race in the subcontinent can hardly be stopped.

"We are going to build an atom bomb, even if we have to eat grass," Pakistan's former chief of state Ali Sulfikar Bhutto once said--only a few hours after Pakistan's deadly enemy India had exploded its first atom bomb on 18 May 1974.

Four years later Bhutto's rule was at an end. First overthrown for election fraud and corruption, then indicted for incitement to murder and executed in April 1979, the ex-Premier still succeeded in smuggling a 319-page statement of justification out of his death cell in Rawalpindi. It contains the most reliable indication of the status of the Pakistani atom project thus far. Said Bhutto in his testament: "We were already on the threshold of full nuclear potential when I left the government to enter the death cell." That was the status at the end of 1978.

Today the threshold has long been passed. The American intelligence service, CIA, fears that any day Pakistan could set off its first nuclear weapon explosion and thereby enter the club of the nuclear powers--an idea which shocks the classic nuclear powers, the United States and the Soviet Union, equally.

More alarming to the Western countries is the possibility that Libya's Qadhdhafi is behind Pakistan and thus on the point of obtaining possession of the atomic weapon.

Qadhdhafi is said to have tried to build an Arab bomb in 1975 with the help of Arab scientists. Since he could not assemble enough atom specialists, however, he gave up the plans. Later, intelligence circles claim, he turned to Pakistan and offered money to his Islamic coreligionists to build an "Islamic bomb."

Whatever truth may be in these rumors, it is known that Qadhdhafi offered the Pakistanis \$40 million and in October last year sent a close confidant, Major Ahmed Jalloud, to Rawalpindi. Western diplomats in the Pakistani capital claim that he verified the status of the bomb.

For the CIA that was only one of many indications that Pakistan was possibly on the brink of a breakthrough. In March the CIA found the Pakistani nuclear armament so menacing that it informed the White House.

The Americans then reduced their economic aid from \$120 million to 40 million and are said even to have considered occupying the uranium project in Kahuta with a commando unit. But nothing to date indicates that Pakistan would give up its nuclear plans on that account--on the contrary.

"Has the United States gone mad?" asked the influential paper NAWA-I-WAKT in Rawalpindi, and Defense Minister Ali Ahmed Talpur publicized determination even in the face of the superpower America. Said Talpur: "Pakistan will yield to no foreign pressure in its atom program."

Even the meeting of Pakistani Foreign Minister Agha Shahi with his American counterpart Vance, at which the United States brought pressure to bear at the end of October, brought about no narrowing of positions--on the contrary.

Hardly had Shahi returned from Washington when his president again expressed intransigence. His country actually does not intend to build any atom bombs, said General Zia cryptically, but a nuclear explosion might at any time become necessary, if the situation so requires.

In order to emphasize his determination, President Zia several weeks ago had the nuclear centers around Rawalpindi and the uranium enrichment plant in Kahuta, as well as the research laboratory in Islamabad, placed under the protection of Crotae antiaircraft missiles. In addition jet aircraft continually circle above the endangered installations, since the Pakistanis fear that the Indians above all would use all means to prevent Pakistan from becoming a nuclear power.

It is probably already too late for that. According to the latest intelligence reports the Pakistanis are building an underground test site for the nuclear explosion in the Sind Desert. Western nuclear experts believe that a nuclear arms race between Pakistan and India can no longer be stopped.

6108

CSO: 5100

MARCOS ANNOUNCES PROBLEMS WITH NUCLEAR POWERPLANT

OW131433 Hong Kong AFP in English 1415 GMT 13 Nov 79 OW

[Excerpts] Manila, Nov. 13 (AFP)--President Ferdinand Marcos today announced that the Philippines' first nuclear power plant was "not safe" and that its construction at nearby Bataan Province should be discontinued. Mr. Marcos said, however, that the contractor, Westinghouse Electric Corp. of the U.S., could continue the project if it changed the design and adopted additional safeguards to protect the health and safety of Filipinos. The president issued the announcement upon receipt of a 134-page report of a three-member special committee headed by Justice Minister Richardo Puno which he created last June to look into the safety aspects of the 1,100 million U.S. dollar plant.

He said that the government would seek a moratorium from the payment of interests on loans and other liabilities incurred in financing the project, located near the U.S. Subic Naval Base, estimated at 127,309 dollars a day. Mr. Marcos ordered the investigation following a warning by high-ranking opposition leader Lorenzo Tanada that the plant might cause an accident similar to what occurred in the Three-Mile Island in the U.S.

During a meeting between the president and the investigative committee, it was pointed out that "Westinghouse has failed to comply with its obligations under its contract with the Philippine Government", the announcement said. It was also noted that Westinghouse had so far failed to obtain the necessary permit from the U.S. Nuclear Regulatory Commission (USNRC) to export the plant equipment to this country.

The commission noted that the plant's design needed changes and more safeguards, adding it appeared that Westinghouse nuclear reactors do not have, among others, "adequate emergency core-cooling system". It also noted that the "crucial problem of nuclear waste disposal has not been solved", with an "international burial site" yet to be located. The report however said that earthquakes, volcanic eruptions and tidal waves "will not cause leakage or spillage resulting in nuclear contamination" and that ashfall was the only hazard that could be caused by the eruption of long-dormant Mount Natib.

CSO: 5100

BRIEFS

9TH, 10TH NUCLEAR PLANTS--Seoul, Dec. 3 (HAPTONG)--Work will start next year for the construction of the nation's ninth and tenth nuclear power plants with a rated capacity of 900,000 kilowatts each. In accordance with a decision made by the electricity resources development deliberation committee last week, the state-run Korea Electric Company will commence the purchase of plant sites for the two nuclear power units early next year, sources at the Energy-Resources Ministry said today. An international bidding will be held during the first half of next year for the purchase of nuclear reactors and turbine generators needed for the two proposed plants, and formal contracts will be signed with foreign suppliers within next year, the sources said. Ground will be broken next year to complete the ninth nuclear power plant in December 1987 and the tenth nuclear power unit in December 1988, the sources said. Meanwhile, the sources revealed, the progress of construction of the nation's second nuclear power plant was reported at 29.5 percent as of Sept. 30 this year, that of the third nuclear power unit at 61.2 percent, and that of the seventh and eighth nuclear power plants at 1.6 percent. The construction of the seventh and eighth plants started this year. [Text] [SK030921 Seoul HAPTONG in English 0808 GMT 3 Dec 79 SK]

2ND, 3RD NUCLEAR PLANTS--Seoul, Dec. 5 (HAPTONG)--The government plans to dedicate two nuclear power plants now under construction some six months earlier than originally scheduled. The plan was designed to meet the ever-rising demand for electricity at home, President Kim Yong-chun of the state-run Korea Electric Company said Tuesday. Under the plan the construction of the nation's third nuclear power unit will be completed sometime during the latter half of 1982, about six months earlier than originally planned, he said. The nation's second nuclear power unit will also be dedicated during the first half of 1983, some six months ahead of the original schedule, he said. Meanwhile, the progress of the construction of the second nuclear power plant was reported at 29.5 per cent as of the end of September this year, and that of the third nuclear power unit at 61.2 per cent. [Text] [SK050834 Seoul HAPTONG in English 0830 GMT 5 Dec 79 SK]

NUCLEAR POWERPLANTS--The nation will see 16 nuclear powerplants in commercial operation by 1991, when nuclear power generating capacity will reach 13,610,000 kilowatts. According to the Ministry of Energy and Resources yesterday, the nuclear portion of the nation's total power generating capacity will then be 34 percent. It will reach 24 percent in 1986 when the nation has eight operating nuclear powerplants. The ministry has decided not to build any more oil-burning thermal powerplants after 1986, expecting global shortages of oil. [Text] [Seoul THE KOREA TIMES in English 21 Nov 79 p 7]

CSO: 5100

BRIEFS

HUNGARY-USSR NUCLEAR AGREEMENT--Hungarian enterprises will deliver equipment for nuclear power stations worth over 20 million roubles to the USSR. An agreement has been concluded by the Transelektro Foreign Trade Enterprise with its Soviet partner. Under the Hungarian-Soviet intergovernmental agreement, signed 5 years ago, heat-exchangers and water treatment units will be delivered on Soviet orders. [Text] [Budapest Domestic Service in Hungarian 1730 GMT 2 Nov 79 LD]

CSO: 5100

NUCLEAR POWERPLANTS DEFENDED; FURTHER PRODUCTION PLANNED

LD132326 Prague CTK in English 1715 GMT 13 Nov 79 LD

[Text] Prague--Nuclear engineering is a prospective branch of the Czechoslovak economy. By 1985 Czechoslovakia will produce twenty-two reactors and other nuclear power plant equipment for its own needs and other countries of the council for mutual economic assistance.

These facts were given to journalists at Tuesday's press conference by chairman of the Czechoslovak Atomic Energy Commission Jan Neumann. The reactor for the Czechoslovak nuclear power plant at Jaslovske Bohunice in West Slovakia has been supplied by the Soviet Union. The reactor for a V-2 plant in the same locality will already be produced in the Skoda Plzen enterprise in West Bohemia.

At present the plant is working on four light-water reactors. The first of them is designed for a station at Paks in Hungary, two will be used to develop Czechoslovak nuclear power production and one will be delivered to the Nord plant in the German Democratic Republic.

Between 1981-1985 Czechoslovakia will specialize also in other branches and become a supplier of measuring and regulating equipment for nuclear power production.

Czechoslovak is simultaneously involved in the research and development of components for power stations with fast breeder reactors. It has already produced steam generators and sodium systems for the first Soviet plant of this progressive type at Schevchenko.

"I am convinced that nuclear power plants contribute to environmental protection", Jan Neumann stated. Not only are there no exhalation, but also the quantity of radioactive matter escaping into the vicinity is much smaller than in burning coal in classical power plants. A safety system reduces the possibility of a nuclear reactor accident to the minimum, and not even in this case would it mean an escape of nuclear waste. Low-radioactivity waste, decaying fast, will be run into bitumen or cement and stored at specified places in Czechoslovakia. The storage of high-radioactivity waste is secured by the Soviet Union.

Jan Neumann stated that mankind will be able to use nuclear energy for one-two hundred years. New energy sources will have to be sought then--probably in nuclear synthesis or solar energy.

NUCLEAR POWER ESSENTIAL TO NATION

Atom Is Only Solution

Prague ZEMEDLSKI NOVINY in Czech 20 Oct 79 p 5

[Article by Jan Subert: "Nuclear Power Plants Represent the Only Solution"]

[Text] Our first nuclear power plant, V-1 at Jaslovske Bohunice, was put into operation in December 1978, the other two are being constructed and others are on the drawing boards. If all intentions are carried out as planned, the nuclear reactors should cover one-third of all electric power consumption within 10 years and almost one-half by the year 2000. Why such a hurry? We shall try to answer this and two other questions--concerning the safety of operation of nuclear power plants and of processing of "burned out" radioactive fuel--in which our public is interested most in the three installments of the article entitled "The Atom in the Center of Europe." We publish the first part today.

The worldwide energy crisis and rapidly shrinking domestic deposits of fuel also confronts, rapidly and uncompromisingly, our small country with the hard reality of choosing between two alternatives: either we shall rely exclusively on domestic sources of energy-generating raw materials and our national economy will have to forego further growth or we shall continue our dynamic development which will, of course, necessitate acquiring new sources of energy.

This definitely is not exaggerated pessimism out of place. It is enough to consider that the exploitable deposits of brown coal which constitute the basis for electric power production will decline to zero by the year 2040, that we shall have depleted the lignite deposits within 30 years and that, for the same reason, we shall have to stop mining pit coal 70 years from now. The situation may be somewhat alleviated by imports of crude oil and natural gas. Their astronomically rising prices on the world market, however, are unacceptable for our economy and we cannot count on unlimited deliveries even from the Soviet Union in the future.

Under the influence of much press, radio and television information on the utilization of solar energy, this possibility may naturally come under

discussion. It is, of course, necessary to say at the very outset that the entire program for utilization of solar energy is still in its infancy not only here, but also throughout the world and its implementation is tremendously expensive. Nor can we rely upon the rapid, industrial utilization, however, encounters a number of obstacles such as low incidence of wind energy and the ever-changing velocity. And so--whether we want it or not--there exists only one potential solution: the atom!

This conclusion was reached, naturally, not only in our country. The reasoning runs along similar lines also in the FRG which must import 60 percent of its energy needs--80 percent of this quantity consists of crude-oil imports from the OPEC countries. The FRG is considerably ahead of us in the production of "nuclear electric power." The installed output of West German nuclear power plants was 6,400 MW in 1977 and an additional 11,000 MW should be available by 1981. Approximately 22 nuclear power plants with a total output of 21,000 MW are expected to be operating in the FRG by 1985. To all voices opposing this plan the economists reply: "Either the FRG economy will relinquish its further growth, including the possibility of successfully competing on the world markets, or it must continue in the planned construction of nuclear power plants." And the federal government adds: "Nuclear power engineering represents the only possibility for us. We do not have any other alternative."

Let us return, however, to our Czechoslovak conception of nuclear power development which is based on long-term, very broad Czechoslovak-Soviet cooperation. After starting the first block of the V-1 nuclear power plant, the second block will be put into operation by the end of this year so that V-1 will be operating at full capacity of 880 MW as early as 1980. The V-2 nuclear power plant will have the same output. It is being built in the neighborhood of the V-1 and will be put into operation in the first quarter of 1982. The last unit of this triad will be the biggest and most efficient, the V-3, whose foundations have already been laid down at Dukovany in Moravia and which will be completed in March 1983. In contrast to the first two, each of which consists of two blocks with 440 MW output per unit, V-3 will operate with four blocks with a total output of 1,760 MW.

The Czechoslovak program of construction of nuclear power plants, which is based on Soviet nuclear technology, has employed at the outset the time-tested series of light water reactors of the VVER 440 type (440 MW output) which will be gradually replaced by the VVER 1000 type, that is reactor blocks with the 1,000 MW output. Four of these giants are to be constructed in the area of Malovice in southern Bohemia by the end of the 1980's, where our biggest power generating complex so far with a 4,000 MW output is to be put into operation by 1990.

Reactors with a 1,000 MW output are also planned to be used in the construction of nuclear heat plants. The Czechoslovak nuclear power project calls for their being put into operation in Prague, Brno and Bratislava by the end of the 1980's and in the Olomouc-Prostejov-Prerov area later on. The Prague-North nuclear power plant will, in addition to electricity and hot water for heating of apartments, also produce steam which will be piped to the chemical plants at Neratovice and Kralupy.

Even these giant nuclear blocks with a 1,000 MW output, however, will not represent the last word in our power engineering. Part of our nuclear power program is also intensive cooperation with Soviet experts in the design and construction of gigantic power plants. Their basis will be the so-called fast or breeder reactors with a 1,600-2,000 MW output.

Are we indulging ourselves in a sort of "nuclear megalomania"? By no means. The development and use of fast reactors is motivated by weighty economic and matter-of-fact reasons. Present-day nuclear reactors use the isotope uranium-235 for fission of which natural uranium contains only 0.7 percent. The rest consists of uranium-238 which cannot be used as nuclear fuel. Moreover, the size of uranium deposits does not substantially differ from the situation in the coal and lignite deposits. Fortunately, the possibilities exist of transforming uranium-238 into a fissionable isotope, plutonium-239, which can be used as fuel in fast reactors.

The breeder reactors can thus utilize uranium energy 50-60 times more effectively and prevent a premature depletion of deposits. While in the presently used light water reactors we obtain heat equivalent to burning 20 tons of coal by "burning" 1 kilogram of uranium, the corresponding quantity will be 1,000 tons of coal for fast reactors. The development of these reactors which operate in the Soviet Union and France as of now, however, is substantially more complex than the development of the types now currently used. According to preliminary estimates, sodium-cooled fast reactors with a 2,000 MW output will be employed in our power sector only after 1990.

One thing, however, is sure even today. Despite various discussions, scientists and economists throughout the world concur that the light water and future fast reactors now being used represent an abundant source of energy. It is regarded as the only one which will be capable of satisfying the increasing energy needs until the moment when thermonuclear synthesis is mastered, which will free mankind of all energy problems forever. Deuterium contained in unlimited quantities in water will be used as fuel for thermonuclear reactors. The temperature required for the synthesis, however, must be about 100 million degrees Celsius which, at least for time being, poses unimaginably complex problems.

Although one can presume that the first thermonuclear reactor will be completed about the year 2000 (we dealt in detail with this topic in the article "The Laser Igniter" on 16 November 1978), the first industrial thermonuclear power plants--which are also planned for our country--are not expected to be put into operation before the year 2020.

Nuclear Power The Safest Industry

Prague ZEMEDLSKE NOVINY in Czech 27 Oct 70 p 3

[Article by Jan Subert: "The Safest Industry"]

[Text] "I do not believe in the benefits of nuclear power plants. It is only a matter of time then radioactivity will destroy us and all mankind.

I do not trust anything that has something in common with the atom." This opinion expressed in a letter to our editorial board some time ago may seem rather rare to some people. Let us admit, however, that similar views have been expressed in everyday conversations from time to time. How much nonsense has been said of the potential "nuclear explosion" of the reactor, of the dead zone of nature around nuclear power plants and so on. Although they are regarded as ridiculous by the experts, they make uninitiated people nervous. Unnecessarily! All of them stem from lack of information and partly also from the groundless suppression of some data. Nuclear power plants and actually also the entire nuclear industry used for peaceful purposes are among man's safest creative activity.

Where did this proverbial fear originate? It came suddenly, when nobody expected it. It is too bad indeed that, before the atom could show its friendly face to man and offer him its invaluable service, it was introduced to the mankind in the form of a destructive, lethal explosion.

From 1939, when Otto Kahn demonstrated that atoms were not unfissionable, and from 1945, when the Americans by dropping atomic bombs on Hiroshima and Nagasaki offered terrifying evidence of the correctness of this theory, nuclear energy has been marked by the stigma of nuclear explosion. While one atomic bomb contains more than 90 percent highly enriched uranium-235, however, the present nuclear power plants use uranium enriched by 3 percent. They cannot, therefore, ever explode like an atomic bomb. The only danger to man is radioactive radiation. How big, however, is this risk?

Let us first theoretically admit for the moment the possibility of a major accident. It could result only from a series of unfortunate chances, when at the same time the cooling water were to escape from the reactor core, two independent cooling circuits would break down and, in addition, the device would fail to release the so-called "quenching rods" by which the chain reaction can be brought to a halt. In this instance, an enormously high temperature would develop which would melt the bottom of the reactor steel vessel. Such an accident would naturally release radioactive gases into the atmosphere. Such a major accident, however, has not yet taken place in any of more than 250 reactors operating in the world at the present time and yet their combined time of operation has been more than 2,000 years. The probability that the so-called active zone will be disrupted and radioactive waste products will penetrate into the area outside the power plant is about as remote as the possibility that an airplane will crash directly into a nuclear power plant.

But even such a remote probability must not be left to chance. For the case that the active zone is disrupted or cracks appear in the primary pipe system of the so-called containment, the engineers have designed a double protective reinforced concrete shell in the form of a hemisphere which covers up the entire primary circuit of the power plant and closes it hermetically in the case of an accident. The use of containment which can withstand even the crash of a supersonic fighter thus guarantees safety to the adjoining

areas of the power plant and paves the way to the construction of nuclear power plants even in the most densely populated areas. The chance of a major accident in such a power plant is about as big as the probability of a collision if--with all signs and traffic lights working--only two cars were moving in our capital.

In this context, interesting also are the studies dealing with nuclear energy in the year 2000, when approximately 3,000 nuclear power plants are expected to be operating. They concede that a major accident, in which approximately 500 people could perish, can occur once in 30 years. To put it differently, a major accident would kill one person per 10 million inhabitants and year. On the other hand, 20 people are killed in the nonnuclear industry and in fact 300 people in car accidents per 10 million inhabitants and year. In the United States alone, the annual toll of lives is 50,000 resulting from car accidents, 30,000 resulting from accidents in households, 20,000 resulting from accidents in recreational areas and public buildings, 12,000 caused by fires and so on.

The subject of greatest concern and discussion among laymen, however, is not so much "the biggest potential accident" as the radioactive pollution of the living environment by the nuclear power plants which operate safely and reliably. "Why do nuclear power plants have stacks? Do you want to make us believe that absolutely no radioactivity escapes from the power plants?" The most frequently asked questions are formulated in this or a similar way. Naturally, it does not make sense to conceal anything. Yes, these escapes do exist and the stacks are there in order to dissipate in the atmosphere the radioactive refined gases which were produced by fission in fuel elements and "soaked through," that is diffused through the metal sheath. How big and how serious this radioactivity is can be objectively and seriously judged from the following data and comparisons.

Let us take as the point of departure the fact that every inhabitant of our republic is exposed to ionizing radiation in the value of 170-200 mrem or milirem every year (one milirem is one thousandth of rem, while one rem dose biologically affects man as much as 1 R dose or one X-ray examination. Let us add that, when several X-ray pictures are taken, our organism receives a dose of 1-10 R). Of the above dose, cosmic radiation accounts for approximately 30 mrem, natural radiation of radionuclides in the atmosphere, water and soil for 40 mrem, medical diagnoses for 50-80 mrem, use of radionuclides in industry and agriculture for 10-20 mrem, residue of nuclear weapons testing for 5 mrem and operation of nuclear power plants for less than 1 mrem.

The technical periodical, POWER ENGINEERING, published an interesting article based on the fact that 11 American reactors released 12.44 dkg of radioactive waste into the atmosphere and water. And it analyzes the question what would have happened, if these reactors were concentrated in the area of 1,300 square kilometers. The author of the article reaches the conclusion that of the above-mentioned 12.44 dkg every inhabitant would be exposed to 0.0007 mrem of radiation. In other words, a man would have to live 25,000

years in order to receive from the nuclear power plants the dose which is equivalent to one-third of the dose received in an X-ray examination of the lungs. Or to put it differently, he would be exposed to this one-third of the dose radiation, if 249,267 reactors were in operation.

No less interesting is the finding according to which the drinking of six cups of coffee is, from the standpoint of potential genetic consequences, equivalent to receiving 1,000 mrem per week. A similar situation exists in regard to alcohol. It is ironic that, for example, we know much less about the genetic effects of millions of tons of chemicals which we have produced in the past and continue to produce every day than we know about the effects of a small quantity of radioactive waste.

If we sum up what we have said, we must inevitably reach the conclusion that to be afraid of radioactivity escaping from nuclear power plants would be as senseless as to be horrified by the soft X-ray radiation from the television sets which is confined to the close proximity of the television screen.

If we succeed in constructing nuclear power plants with a total output of 35,000 MW by the end of the century, they will increase the radiation coming from natural and other sources by approximately 10 mrem per year. And in view of the fact that we shall substantially restrict by that time and discontinue in the following years the burning of fossil fuels which, because of the radioactivity contained in the waste products, burden our organism with approximately 20 mrem per year, we can actually say that, due to the construction of nuclear power plants, the overall radioactivity of the living environment in our country will decline.

8973

CSO: 2400

PAKS NUCLEAR POWER PLANT TO DIFFER IN SECURITY FROM PREDECESSORS

Budapest MUSZAKI ELET in Hungarian 2 Nov 79 p 4

[Press conference given by Sandor Baranya, Ministry Commissioner of EVM and Imre Fulop, Director of Iparterv: "Visit to the Paks Nuclear Power Plant Construction Site"]

[Text] Imre Fulop, director of Iparterv and Sandor Baranya, ministry commissioner of EVM [Ministry of Construction and Urban Development] discussed the construction of the Paks nuclear power plant at an on-site press conference. They revealed that Iparterv had been participating for nearly a decade in the plan preparation, to develop partial task conceptions for program and performance planning and the development work of the Paks nuclear power plant on the basis of EVM's commission and Erdoterv's delegation. The task entails the overseeing of plan preparation and implementation efforts for the nearly 1.2 million cubic meter main plant building, auxiliary building, diesel machinery house and compressor house.

The planning for the implementation and establishment of the chief plant building containing the first and second reactor blocks (2X440 MW), amounting to the first stage of the Paks nuclear power plant construction, was begun in the fall of 1974. Because of the magnitude and uniqueness of the task, specialists, research institutes and assistant architects were included in the work.

Iparterv is preparing the plans for building sections not in immediate contact with nuclear technology, while the plans for sections of the structure directly affected by the technology are being prepared by the Typloelectroproject planning office of Kiev. Iparterv adopts these plans and reworks them according to Hungarian materials, implementation and construction technologies.

The floor area of the chief plant structure is 270 by 125 meters, and is 50 meters high. In addition, almost 8 meters of the structure is underground.

The enormous dimensions comprise just one difficulty. The second difficulty derives from the fact that the planners of the first Hungarian nuclear power plant had to gain the necessary practical experience on the job, although the specialists were able to study the nuclear power plants under construction

in the Soviet Union, GDR, Bulgaria and Czechoslovakia. The existing direct connections with industrial planning offices of socialist countries, cooperation and exchanges of information assisted the planners through many difficulties, but the practice could be truly mastered only at home. In addition, it should also be noted that the Paks nuclear power plant is the first example of a plant with the new security system which provides significantly greater protection than the existing plants. Thus in many respects, it deviates from the existing power plants in the countries mentioned.

The main plant building consists of four sections which can be isolated physically and functionally. The first is the machine room or turbine chamber in which four 220 MW turbines will be situated. This does not basically differ from an ordinary power plant machine room. The second is the reactor chamber, in the lower portion of which in the so-called hermetic area, two 440 MW reactors will be situated among thick walled boxes which are in areas made of reinforced concrete. The third section consists of the electrical galleries which surround the reactor chamber, and in which the control rooms that monitor the automatic operation are also located. Finally, the fourth section consists of two plant malfunction locator towers which serve to arrest overloading.

The planning tasks of the Paks nuclear power plant cannot be compared to any previous planning work. They must be carried out in such a way that the plans go directly from the drawing board to the construction site in order to insure continuity of implementation.

Naturally the difficulties must be overcome not only by Iparterv but also by investments, general planning, and in other respects but not in the least, by the construction enterprises. The implementation requirements and monitoring levels desirable for the physical and biological security from nuclear effects, yet unfamiliar technologies in our country, the tremendous amounts of material and machinery which have to be worked in a relatively small area, and the safe and expert employment of several thousand workers is no small task. It is further complicated by material procurement and transportation difficulties.

For the proximate direction of the investment a government commissioner vested with full authority was appointed. The ministries responsible for the implementation also appointed ministerial commissioners, who with day-to-day operational involvement and even with direct orders are insuring the achievement of the goals and the elimination of snags as they occur.

The results of the accelerating construction pace can already be seen and experienced on the site. For Iparterv and subsidiary planners this means even greater efforts, even shorter planning and production time and continuous overseeing day and night, Sundays and holidays to service the construction which is taking place day and night.

This is no light task, especially if we consider that this year at the same time, the planning and establishment of a main plant building of a similar magnitude three and four reactor block plant was also begun.

Iparterv and Eroterv are conducting all of the country's power plant construction planning with good cooperation and joint efforts. This many decades of cooperation is also assurance that the complicated planning task of the Paks nuclear power plant will be successfully concluded.

BRIEFS

SECOND NUCLEAR POWERPLANT--Zagreb, November 14 (TANJUG)--The second Yugoslav nuclear powerplant will be built in Prevlaka on the banks of the river Sava, some thirty kilometers down-stream from Zagreb, the capital of the Yugoslav Constituent Republic of Croatia. The plant's output of 1,000 megawatts will be almost twice that of the first Yugoslav nuclear plant under construction in Krsko, the Yugoslav Constituent Republic of Slovenia. Sixty-five to 70 percent of the project will be carried out by Yugoslav enterprises. The nuclear plant in Prevlaka, which is to be inaugurated in 1990 is one of six nuclear powerplants planned in Yugoslavia. [Text] [LD142310 Belgrade TANJUG in English 1923 GMT 14 Nov 79 LD]

CSO: 5100

ARGENTINA

DEVELOPMENT, RESEARCH ON NUCLEAR INDUSTRIAL TECHNOLOGY REPORTED

Nuclear Science Conference

Buenos Aires LA PRENSA in Spanish 7 Nov 79 p 12

[Text] The Eighth Scientific Meeting and Second Latin American Nuclear Technology Meeting as well as the Argentine Nuclear Industry and Engineering Fair is being held at the General San Martin Cultural Center, organized by the Argentine Nuclear Technology Association.

The meeting consists of lectures given by specialists and technical and scientific reports on nuclear technology and its applications to engineering and industry as well as round-table discussions taking up topics such as training in the nuclear field and various aspects of nuclear engineering.

To learn details about the meeting and at the same time to familiarize ourselves with the current work of the organizing association, we talked to Dr Jaime Pahissa Campa.

"Our organization," he told us, "was founded in July 1972 by a group of experts connected with Argentina's nuclear efforts, coming from various institutions, such as the Buenos Aires National University, the National University of the South, the National University of Santa Fe, YPF [Government Oil Deposits], SOMISA [Argentine Joint Iron-and-Steel Association], and basically the National Atomic Energy Commission. Altogether, the initiating group was made up of about 50 persons and they proposed the creation of an organization devoted to the study and advancement of nuclear technology and/or its application in engineering and industry and everything else relating to said discipline, gathering persons, enterprises, and local and foreign organizations."

The first scientific meeting of the association was held in December 1973 at which time more than 30 scientific studies were presented and several lectures were given. In November 1974 it organized a meeting on the participation of domestic small, medium, and large-scale industry in

Argentine nuclear technology; it was attended by high government officials and more than 120 representatives from government and private enterprises. In December of that year, the Second Scientific Meeting was held in Mar del Plata, and the third and fourth scientific meetings were held in 1975, at headquarters in Buenos Aires and Rosario, respectively. The fifth meeting was held the following year at the Tercero River Reservoir and parallel meetings were held on the topic of "Quality Control and Guarantee."

In 1977, the association obtained legal status and in October held the Sixth Scientific Meeting and the first Latin American meeting in Alta Gracia, Cordoba, attended, in addition to the Argentine and Latin American representatives, by guests from Italy and Canada who had been invited on their own special request. The meeting was declared to be of national interest.

In 1978, the business enterprise, quality guarantee, finances, and training committees were established; along with the existing ones (scientific, meeting organizing, information, publications and public relations, and advancement), they complete the advisory body to the steering committee. In November, the Seventh Scientific Meeting was held in San Rafael, Mendoza, which was also declared to be of national interest.

Dr Pahissa Campa pointed out to us that all meetings received studies from Germany, Canada, Italy, the United States, and other nations which only underscores the association's worldwide prestige. "Now we have been invited to attend the meeting organized by the Nuclear American Society in San Francisco which, together with its European counterpart, is working toward the establishment of an international federation of nuclear technology societies. At that meeting we will take the steps necessary so that the next international biennial conference on technology transfer will be held in Argentina."

Questioned about the results expected from the current scientific meeting and fair, he pointed out that one may look forward to a noteworthy success in view of the quality of the almost 300 reports presented and the closer relations with countries in the Latin American area with whom it is possible to arrive at fruitful agreements, such as the agreement signed in Peru for the supply of a nuclear power plant.

He added that, apart from its routine activities, the association continues to work on the bill for the promotion of the nuclear industry whose basic studies are already in the hands of the National Atomic Energy Commission. The bill is designed to put Argentine industry on an equal footing with the foreign competition.

Work is also going forward on the new building where there will be a lecture hall for the better promotion of activities. "If we should be successful in having Argentina become the site for the next international meeting," he pointed, "then we will also be thinking of organizing an international nuclear technology fair. We want constantly to increase our

support for the National Atomic Energy Commission and we want to provide an incentive for an awareness of nuclear progress."

"The estimates for the construction of future atomic power plants show the importance being assigned to this topic in Argentina," he said. He added that "in advancing the construction program, it is even feasible to launch the construction of new power plants in view of the energy demand deriving from national growth. Let us not forget that the use of petroleum or hydroelectric energy is a limited thing, something that is not true of nuclear energy whose growth is unlimited and whose production is also cheaper."

He added that Argentina must very seriously consider the promotion and expansion of the nuclear industry, especially exports, in view of the high added value involved. By way of example he mentioned Switzerland's specialization in the precision products industry and Luxembourg's specialization in heavy industry which creates a positive balance in foreign trade. "We can turn the nuclear industry into a leading industry on the Latin American market," he said, "where we have great possibilities."

Admiral Addresses Conference

Buenos Aires LA PRENSA in Spanish 7 Nov 79 p 12

[Text] On the occasion of the opening of the Eighth Scientific Meeting, the Second Latin American Meeting, and the First Argentine Engineering and Nuclear Industry Fair, RAdm Dr Carlos Castro Madero, chairman of the National Atomic Energy Commission, and Dr Jaime Pahissa Campa, chairman of the Argentine Nuclear Technology Association, addressed the audience. Here are the remarks by the chairman of the National Atomic Energy Commission.

I am especially happy to participate in this event which once again points up the concern and interest in the development of nuclear activities on the part of qualified individuals with outstanding background as well as important national enterprises.

That interest is today shared throughout the region where nuclear electric projects are beginning to take shape.

The Argentines, who have been acquiring experience in the nuclear field, are sharing it fully and in a balanced manner with the countries of the Latin American area.

The bilateral agreements are the basic instruments for nuclear cooperation through which solid friendships are also being developed and, down through the years, those friendships have been putting together a real regional "nuclear family" many of whose members are with us today.

During the first phase, nuclear activities reveal an exclusively public legal framework and aspect. That is followed by another period of time which began recently and where the magnitude of the task to be accomplished demands growing support from the private sector.

The government and private sectors must learn to act in coordination, making utmost use of resources in terms of skilled personnel, materials, and financing; this first of all means preserving the human resources in research and development in order, without pressure, but with clear guidelines and objectives, to accomplish the task of supporting nuclear activities.

The interface between the public sector and the private sector in the fields of research, engineering, and industry presents difficulties sometimes generated by mere reciprocal prejudices, stereotyped approaches, or lack of adequate long-range vision.

In this interface, one of the biggest risks is the possibility of upsetting the balance that must exist in nuclear activities between the public sector and the private sector on the basis of the equilibrium required for the preservation and the acknowledgment of government authority since nuclear activities cannot be subjected to a system in which commercial aspects or those related to the strictly private sector would predominate.

We must furthermore prevent any possible differential advantages in the labor system to cause horizontal personnel transfers. If these transfers are not controlled, they can cause a real erosion of the public sector, an area in which the scientific, technical, and administrative teams have historically been put together and, especially in the case of Argentina, those are the teams who have had and still have responsibility for managing the nuclear plan.

Fortunately, the Argentine republic has a good instrument for better communication between the two sectors: The Argentine Nuclear Technology Association. In this association we find represented all of the sectors involved in nuclear activities and all of the professional organizations and their officials demonstrate an intelligent concern with guaranteeing, within themselves, an adequate balance which is the very foundation for the permanent and fruitful work being done.

As chairman of the CNES [National Atomic Energy Commission], I must express my appreciation for the permanent collaboration which we have been getting from the association and we hope that, throughout its existence, it may be able to reproduce the phenomenon of continuity and coherence in the action which characterizes the CNEA and which sustains the confidence that the country has in it.

I will have an opportunity to talk to you again with reference to the Argentine nuclear plan and the recent decision to build the third nuclear power plant and a heavy-water plant.

But today, in this very specific and important forum, I wish to point out again that we hope that Argentina and our region will continue to keep close tabs on the effort of the CNEA, on the decisions which the national government is making, and on international collaboration which is developing now because we are convinced that this is in the permanent interest of the nation and because our collaboration shows, with specific facts, a vocation to serve loyally without seeking any predominance for the sake of the region's progress as clearly spelled out in the policies and objectives of the Argentine Republic, approved by Decree No 3.183, of 1977, said provisions being today fully enforced. Among these I might single out the provisions for "working toward the organization of a Latin American cooperation system in the nuclear area" and "promoting bilateral agreements with other countries."

Gentlemen, nuclear growth calls for support from everybody and therefore requires everybody to understand what it involves and to get the necessary information, to contemplate the facts and circumstances characterizing the decisions that are being made in an objective fashion.

I am sure that, as the real situation becomes known, any possible criticisms will no longer be viable. The national government has clearly established its objectives in the nuclear area. With the participation of all sectors we will continue to perfect our international collaboration.

In taking the initiative and responsibility for organizing these meetings, the Argentine Nuclear Technology Association is making an extremely valuable contribution toward those shared objectives.

I greet all participants and I congratulate the officials of the association and all those who collaborated toward the success of these meetings and I want to extend a very cordial welcome to our friends from abroad; I hope that, by the end of these meetings, we will all be sure that we have taken a significant step in support of the nuclear activities of Argentina and the sister nations throughout the region."

Research, Production

Buenos Aires LA PRENSA in Spanish 7 Nov 79 p 12

[Text] In brief statements to the press, CNEA chairman RAdm Carlos Castro Madero stressed the collaboration of private enterprise in the nuclear plan not only with regard to the construction, installation, and operation of power plants but also with respect to the prospecting and mining of uranium, the production of radioisotopes, and radiopharmaceuticals, as well as in the manufacture of elements needed in the program.

With reference to the work of the commission whose chairman he is, he noted that it performs multiple activities ranging from basic research all the way to applied research, as well as exploratory and advanced

development including even the prototype of a pilot plant. "Our mission," he added, "goes even further because it covers vast areas of engineering and production, ranging from elementary particles research, at one extreme, all the way to the generation of electricity and the production of fuel elements, at the other extreme."

Ventilation, Airconditioning

Buenos Aires LA PRENSA in Spanish 7 Nov 79 p 12

[Text] "Established in 1954, Termeco has played an important role in the central airconditioning field which presently makes it one of the principal local specialists in this field. Converted into a division of Tool Research Argentina, it has, since 1975, been continuing its work in the field of thermomechanical systems," we were told by company executives who added that "in addition to its participation in airconditioning installations in important construction projects, it also is involved in special installations for which it has a specific department."

Through this department—they said—the enterprise participates actively in activities in the nuclear field; in 1968, it supplied the ventilation system for the radioisotope production laboratory of the CNEA; in 1969 it participated—together with Tulsini Klima Technik GMBH [Incorporated], in the planning and supply of equipment for ventilation and airconditioning systems in the reactor and auxiliary buildings of the Atucha Nuclear Power Plant. Then—they told us—the company built the ventilation systems for the cells, the auxiliary handling and laboratory area of the cobalt 60 cells at the Ezeiza Atomic Center.

Expanding its operations, it later on took care of the complete construction of the high-radio-activity chemical cells at that center which will shortly go into operation.

Our sources added that, in addition to other, lesser projects, the company provides equipment of its own design for the storage reservoir at the nuclear power plant, for airconditioning for the reactor building, ventilation units, local air cooling units, and airconditioners for the service buildings.

Civil Engineering Requirements

Buenos Aires LA PRENSA in Spanish 7 Nov 70 p 13

[Text] "Over the past several years, the technological development of nuclear power plants and their safety imposed an important series of limitations and requirements upon civil engineering in terms of planning and execution; the special technology involved here sprang from the requirements for civil engineering projects which we might call high-level conventional projects, such as dams, hydroelectric power plants,

etc.," we were told by nuclear construction engineers; they added that the construction of structures, which are complicated in terms of shape and dimensions, with large quantities of reinforced parts, with highly demanding precision tolerances and high proven quality, calls for the specialized development of the planning and construction organization. This--they pointed out--comes on top of the even more specialized standards which the construction supplier industry and the construction industry itself must meet. Strict and expensive quality controls and standards, the need for skilled personnel on various levels, materials, such as cement, aggregate, additives, steel, etc., likewise with carefully inspected quality, sophisticated production centers turning out concrete, unconventional shoring and planking, adding up to a technique of decontaminating linings and paint--these are the outstanding features of civil engineering involved in nuclear plants.

They added that the enterprise, which has handled practically all of the civil engineering for Argentina's two nuclear power plants is Impresit Sideco which built the Atucha I power plant and which is in the process of finishing the power plant at the Tercero River Dam reservoir in Cordoba.

Atucha I Pool Building

To solve the spent radioactive fuels storage problem at the Atucha I power plant beyond 1981, the CNEA also contracted with Impresit Sideco for the expansion of the existing installations with a second pool building, adjacent to the first one and the pump building which will take the water from the existing filter plant.

The pool building consists of four storage pools, one for transfer to the connection and disconnection of the assemblies and a smaller pool for filling a tank for the external transport of irradiated fuel elements. To illustrate the work volume we might mention that 8,000 m³ of concrete has to be used. The work is now half finished and will be completed and ready for use by the middle of next year.

The Embalse [Storage Reservoir]

The Embalse nuclear power plant is the second one to be running on natural uranium; it was built by the CNEA and is the first one to employ Canadian technology (the CANDU reactor).

The installed capacity will be 660 Mw and it is located along the shore of Lake Embalse Rio Tercero.

The chief suppliers were the firms of Italimpianti S.p.A. [Incorporated], which handled the development of the conventional part and the Canadian government outfit AECL (Atomic Energy of Canada LTD) which took care of the nuclear part of the project.

The installations consist of two main groups: The conventional sector which includes the turbine and generator building and which is 110 m long, 55 m wide, and 40 m high, in turn made up of two wings or sectors. At elevation 38 m on the ground level, there is a 350-t traveling crane which is used in placing and handling the turbine and the generator.

The cooling system consists of the pump building which is a concrete structure 30 m wide, 30 m long, and 15 m deep; it contains three $50\text{-m}^3/\text{sec}$ pumps for the water treatment building and for its conveyance out of the turbine building through a pipeline with a diameter of 2.60 m, leading into a canal 6 km long and 34 m wide, returning the water to the reservoir with a temperature change of 3°C compared to the temperature at the lake surface.

Then we have the supplementary and administration buildings, the garage, the 500-kv and 132-kv transformer substations, the liquid sewage treatment plant, and about $20,000\text{ m}^2$ of hard-surface area.

The second sector, called the nuclear sector, basically consists of the reactor buildings. This building has a cylindrical shape with a diameter of 43 m and a height of 50 m; with its dome or cupola on top, it constitutes a water reserve for emergency cooling with an approximate capacity of $3,000\text{ m}^3$.

The thickness of the cylindrical wall casing [housing] is 1.20 m and was built with sliding shoring, activated by 65 hydraulic hammers at 22 t each; they raised the total weight of this ring-shaped crown—which comes to approximately 320 t—above the drill bars, inserted into the concrete, in a synchronized fashion.

The entire reactor structure is supported by 550 steel struts with a stress of 450 t.

Here are some general statistics on this project: 1.5 million m^3 of earth movement, $120,000\text{ m}^3$ concrete, and 15,000 t of steel.

The workshop and the support facilities, to provide housing for some 5,000 persons (higher-level personnel, engineers, scientists, technicians, and their families, workers) required careful planning and the development has gas, electric energy, dining halls, recreation areas, assistance facilities, etc.

To supplement the plant facilities we might mention the establishment of materials and spare parts warehouses, a machine shop, a carpentry shop, and an assembly shop, concrete production and distribution centers, and laboratories equipped for materials testing; the entire project can employ about 1,500 persons at the plant.

The completion deadline is approximately 72 months (1974-1980).

Construction Work Details

Buenos Aires LA PRENSA in Spanish 7 Nov 79 p 13

[Text] "Nuclar S.A. is a company made up of the Argentine enterprises Ingenieria Tauro, A.G. McKee & Company, Argentina; Techint Company, Tecnica Internacional, SADE and DESACI; all of these are corporations; the outfit is called upon to provide research reports, technical assistance, engineering and construction as well as assembly services within the broad spectrum covered by nuclear technology, nuclear power plants, and fuel cycle installations," we were told by one of the company executives. He added that the parent companies were present individually or were partly associated in most of the major engineering projects carried out in the country, among which we might mention the Zarate-Brazo Largo complex, the installation of blast furnaces 1 and 2 of SOMISA, the Christ the Redeemer Tran-Andean Tunnel and the Fray Bentos—Puerto Unzué Bridge, including the newsprint production plant (Papel Prensa S.A.), etc.

"Nuclar has the support of more than 1,000 engineers," our source added, noting that the enterprise has already played a significant role in the assembly of the nuclear power plants at Embalse, Cordoba. Among the tasks of major technical interests we have the assembly of the four steam generators, the pressurizer and the degasifier in the reactor building of the nuclear power plant. The enterprise also installed the frames for the feed system of the heavy-water collectors, each of which weighs 40 t and it has begun the installation of 570 t of equipment, 400 t of piping, 40 t of tubes, and 1,400 m of cable-carrier trays in the reactor building. The 380-t traveling crane was also installed in the nuclear power plant's turbine building and the distance between the wheel axles is 35 m; this makes it one of the biggest to be built in the country.

On the other hand, the firm has begun the assembly of the Alsaldo turbo-generator which, with its 763.5-Mva alternator, is the biggest in Latin America; in the electrical portion of the nuclear power plant, it is installing the 132-kv and 500-kv handling stages, including the control room. It also installed water circulation pipelines which take the water from Lake Embalse to cool the turbine's condenser. The assembly is being accomplished according to the ASME code and the weldings are x-rayed 100 percent.

Power-Generating Equipment

Buenos Aires LA PRENSA in Spanish 7 Nov 79 p 13

[Text] The Embalse Rio Tercero Nuclear Power Plant at Cordoba has four Fiat emergency power-generating sets which, together, add up to more than 11,500 kw.

These are sets of 3,600-kva, each, with 1,000 rpm, with automatic start-up, made and supplied to keep the power plant's cooling system in operation if there should be any breakdowns at the plant. These are motors of the V-pattern version with 20 cylinders, series A-230, with supercharging by means of a turbofan driven by the exhaust gases.

The specifications require those motors to operate absolutely reliably and to meet strict standards required by the CENA.

The enterprise has been producing big Diesel motors since 1957 in its FMT (Thermal Machinery Factory) establishment in Cordoba. Its output capacity is on the order of 200,000 hp per year of Diesel motors; so far it has built more than 1.5 million hp for various applications such as electric power generation, petroleum and gas [extraction], railroads and shipbuilding; it thus became the chief establishment of its kind in Latin America according to its manager.

The A-230 and AL-230 four-stroke motor series available on the market offers a broad range of output capacity in units from 4 to 20 cylinders and they are made under license from Grandi Motori Trieste (GMT [Trieste Big Motors] Italia) which has 70 years of experience in research, planning, and production of motors.

Together with TTG [Fiat Turbomechanics and Turbogas] Italia), FMT has been producing gas turbines with a capacity of up to 40 Mw in Argentina since 1978.

Through its energy products and railroad transportation line, Fiat Diesel S.A. Argentina, and TTG are represented at the Argentine Industry and Nuclear Engineering Fair (stand No 3) which can be seen at the General San Martin Cultural Center until 10 November, inclusive.

High-Technology Components

Buenos Aires LA PRENSA in Spanish 7 Nov 79 p 13

[Text] COMPTARSA (Argentine Metal Construction), SAIC [Incorporated] participates actively in Argentina's nuclear program and is one of the chief suppliers of high-technology components to meet the needs of the power plants," we were told by one of the company executives. He added:

"At Atucha I (now in operation), we installed traveling cranes, water storage tanks, degasifier tanks, cooling units, heat exchangers and intermediate cooling units. At Embalse de Rio III (currently under construction), we installed heat exchangers, water chambers, and forced circulation pipes.

"We also supply equipment and structural components required for the construction of big projects and also for the biggest companies operating in the country so as to keep up with the nation's technological evolution. This is why we are continually providing the most modern machinery available and this is why we are also training our technical personnel and workers in accordance with the most advanced requirements of the industry."

Its industrial plant, put up in 1949, has 50,000 m² of covered surface area on land consisting of 27 hectares. It employs 883 blue-collar workers and white-collar employees, including 85 engineers and technicians.

"Right now," he added, "we finished the construction of a wing for the manufacture of heavy boiler equipment intended to meet the need for important components for nuclear power plants, reactors, cracking towers, and large-sized tanks [tanks with great thickness].

"The new workshop will be equipped with suitable devices for moving heavy equipment (up to 560 t) as well as for processing and heat treatment.

"The production line covers the manufacture of processing equipment and structural components for oil refineries; petrochemical plants, nuclear power plants, thermoelectric and hydroelectric power plants, installations for natural gas processing, petroleum production, steel industry, chemical industry, paper industry, and cement plant; pylons for high-power lines; mining; heavy structures for engine rooms, boiler and building supports; portal cranes and traveling cranes; bars and pumping equipment; equipment for petroleum and byproducts storage; spheres for the storage of liquid gas; railroad and highway bridges; etc.

"To make sure that the equipment and structural components, turned out at the industrial plant, will strictly meet requirements, so as to guarantee optimum operating results," he added, "we have instituted quality control and guarantee sectors.

"Our enterprise is aware of the importance of atomic energy in the world today and it is conscious of its implication and future protection; it collaborates by contributing its equipment to the development and construction of new nuclear power plants in Argentina."

Parallel Power Plant Project

Buenos Aires LA PRENSA in Spanish 7 Nov 79 p 14

[Text] KWU (Power Plant Union) AG [Incorporated] is an enterprise established in 1969 through the merger of the department for energy plants of the House of Siemens and the AEG [General Electric Corporation] group with Siemens purchasing all of that company's shares by the end of 1977.

"Right now," company representative Wolfgang Kitzel told us, "KWU is among the principal enterprises on the international market with regard to the design, manufacture, installation, and commissioning of conventional and nuclear thermoelectric power plants. Since it is a private outfit, it tries to service the markets within its reach for obviously commercial reasons.

"This is why the contract drawn up with Brazil implies the transfer of enriched-uranium and natural-water reactor technology whereas the Argentine nuclear plant calls for a contract involving natural uranium and heavy-water reactor technology. These projects therefore are parallel but they absolutely do not interfere with each other."

Our source pointed out that there are noticeable differences between the contracts signed with NUCLEN [NUCLEBRAS [Brazilian Nuclear Corporation] Engineering, Inc.] through the Brazilian National Atomic Energy Commission and Argentina for the construction of the Atucha II Power Plant.

"The contract between Brazil and Germany," he said, "called for the establishment of a technical committee constituted upon the express desire of the Brazilian side."

This committee has the mission of assuring the responsibility of KWU in the construction of nuclear power plants. Although the committee's decisions must be adopted unanimously, they may, according to the contract clauses, be cancelled at any moment by the Brazilian majority of the board of directors of NUCLEN. In that case, KWU is relieved of its technical responsibilities.

"On the other hand," he added, "I must underscore the fact that, since the establishment of NUCLEN in July 1976, this technical committee did not even have to be summoned into session in view of the broad cooperation between the parties which meant that all decisions so far were adopted by mutual agreement.

"In spelling out the Argentina-German contract we started with the basic idea that the Republic of Argentina has a large potential in terms of scientists and engineers specializing in nuclear technology and that there is a vast store of experience with regard to the engineering involved in power plants of this kind.

"Thus the Argentine engineering enterprise will not have a technical committee, such as the one in NUCLEN.

"On the other hand, KWU cannot and does not want to influence the decisions dealing with Argentine interests or the country's energy policy or anything else of that kind.

"The contract was drawn up for the purpose of making sure that KWU will supply the necessary technological resources so that a nuclear technology may be developed in Argentina. Thus we were also thinking of the combined development of pressure-pipe reactors for which the engineering outfit will have unlimited export rights.

"KWU is involved in this engineering enterprise in the beginning with a minority share of 25 percent and it retains the right to sell its share package at any moment to the CNEA, as provided for in Argentine laws, if, for example, it were not in agreement with the enterprise's financial policy."

Provision has also been made under the contract that the KWU minority partner, with the passage of time, reduced his share of 25 percent down to 0.

Our source also added that there was no foundation to stories to the effect that it was possible to import components from Brazil for the Atucha II power plant since most of those components will be made in Argentina in those that cannot be made here will be procured by common agreement among the CNEA and KWU on the international market, for example, in Europe or Japan. "Talking about Brazilian nuclear hegemony in Latin America," he added, "would be quite ridiculous, especially if we consider the fact that the area's first nuclear power plant was built by Siemens in Argentina approximately two years ago and that cooperation between CNEA and KWU has never been interrupted since then; this was further confirmed through the new contract for Atucha II.

"Reports in the press repeatedly made reference to the difference in the price between the Canadian offer (\$1,075 million) and the German offer (\$1,578 million)—figures released by the chairman of the CNEA, Adm Castro Madero, for the Atucha II Power Plant.

"This price difference, involving 50 percent, was reported, as is, without at the same time mentioning the difference in the price of energy generated which, according to an announcement by Adm Castro Madero during a press conference, is only 18.9 percent, not 50 percent.

"The difference in the generating cost is considerably less since the German offer supplies a power plant which will generate 62,000 kw more and that is equivalent to a higher investment cost on the order of \$120 million."

On the other hand, the fuel supply, which "burns" better, is more advantageous in the German design—a point that was noted by Adm Castro Madero, during the press conference—which signifies an advantage for the KWU offer amounting to another \$160 million.

If we add these figures up (160 millions plus 120 millions) and if we conclude that the real price difference between the two offers is only 220

millions in favor of Canada and not 500 millions, as reported in various news media, then we will see what the situation really is.

"On the other hand," he concluded, "the terms and supports provided for in both proposals are so different—especially with regard to the safety of the power plant systems—that there is a great possibility that this difference of \$220 million can be reduced considerably after a thorough comparative analysis of both offers."

Program Equipment and Training

Buenos Aires LA PRENSA in Spanish 7 Nov 79 p 14

[Text] "The company's decision, made in 1975, to participate in the Argentine nuclear program marked the beginning of a policy aimed at going beyond conventional activities in this field and producing the most important equipment that could be required in a nuclear power plant," we were told by Engineer Alexander F. Rivalis, head of the Nuclear Components Engineering Sector of INPSA (Pescarona Metallurgical Industries).

He added that this objective included the main equipment for the nuclear islands, such as the equipment constituting the steam generating system through nuclear energy (NSSS).

"That company decision," he said, "really implied many internal changes because we had to work out the plant and develop an entire system of organization and quality guarantee; besides, we had to create an adequate awareness among personnel as to the critical importance of the tasks involved."

This was a decision made with a view to the future because the initial investment was very heavy, with the subsequent business risks implied in this kind of undertaking.

He added that the enterprise within this framework began to tackle its tasks in the nuclear field by supplying equipment to the Embalse Nuclear Power Plant in Cordoba; during that phase the company mostly turned out equipment which played an important role in the power plant, not because it constitutes the steam generating system, but because it represented basic auxiliary units needed in the operation of the plants. By way of example he mentioned the spare parts machinery bridge [staga] for fuel elements, the valve caps for reaction mechanism and for the control of the reactor (elements which are welded directly upon the reactor), the reactivity mechanism platform, the air locks for equipment and personnel, and others.

"This is the record for these past 5 years ever since that policy decision was made, until the current phase; during that time we supplied about 80 percent of the equipment requested from us; we acquired very valuable experience and learned much about important technologies used in the nuclear

field. We are completing the supply for the Embalse power plant, a contract which was awarded to us, and we are now ready to participate in the international bidding competition for the supply of nuclear system equipment for steam generation at Atucha II; this bidding invitation will be issued by CNEA. This is why we are going to beef up our equipment and to complete our technological requirement so that, when the invitations are received, we will be able exactly to respond to the CNEA requirement, both in terms of material quality and in terms of the precise schedule for completion.

He added that contacts of a technical nature are now being established with European and American companies to get the technological assistance necessary for the production of these equipment items.

"They have sent us their experts," he pointed out, "since they require a bonafide effort and solvency before they grant their licenses or give their assistance. Those experts analyzed our production line, our investment projects, equipment, and experience in the nuclear field and their approval was a real pat on the back for us." He added that they have drafted a realistic program for work on Atucha II and that they are prepared to produce the body of the reactor vessel, the steam generators, the pressurizer, heat exchangers for the moderating system, primary piping for heavy-water pipelines, etc.

"We are also conducting studies to produce more sophisticated equipment for the next power plant," he added, noting that this month they will select the foreign companies which can provide them with technology and equipment.

He also said that work on the construction of the new plant in Mendoza is advancing rapidly; the first 80 m of the first workshops have already been completed and it will ultimately be 320 m long, 32 m wide, and 35 m high, overall, with a hoisting capacity of 650 t. This plant will not be intended exclusively for the production of nuclear equipment—he said—but it will also turn out heavy equipment of up to 650 t for all sectors involved in power generation, in other words, water power, nuclear, petrochemistry, etc. He stressed the fact that plants exclusively intended for the preparation of nuclear materials exist only in France, the United States, Spain, and Brazil, although the latter country has cut its initial plans back considerably.

He added that two of the machines planned have already been placed in the finished portion of the workshop; one of them is a vertical lathe of large dimensions which is already operating and the other one is a drilling-milling frame [mill bent] which will begin operating within one or two months, both under numerical control. It is hoped that a milling machine, procured in England, will be installed by the end of the year; its foundation is now ready. A new milling machine will also be installed; it is now ready for shipment in Italy and will complete the first phase of the company's heavy machining center; this will happen during the first quarter of next year. Starting in February of next year, the company will go into

the new expansion phase which will lead up to 320 m, with new machinery to be placed in the heavy machine shop center, as well as new welding equipment for heavy boilers (welding columns, positioners for 300 t, rollers, and large heat treatment furnaces).

With respect to the necessary investments, he pointed out that recent calculations have come up with a figure of more than \$100 million for which the company already has a IDB loan of 55 millions; the rest will have to come from in-house financing and local sources. "During the first months of next year we will issue international bidding invitations for the equipment," he added, "in which important offerors from Europe, the United States, and Japan will participate."

He added that the personnel who will operate the new machines has been and is being trained abroad to keep up with the construction process and then to receive the machinery, acquiring practical experience for proper operation. Engineers as well as foremen and operators are taking training courses in Europe in welding which is one of the basic elements in heavy metallurgical construction.

"We are trying to show the CNEA that the confidence which it has placed in Argentine industry has a solid foundation and that the technical capacity and equipment of the local enterprises will make it possible absolutely to do the job which the country wants done."

Power Plant Airconditioning System

Buenos Aires LA PRENSA in Spanish 7 Nov 79 p 15

[Text] Engineer Jose A. Sunchis, manager of Lix Klatt SAIC, has sent us the following article on "Airconditioning in Nuclear Power Plants."

The force that makes the earth shake must be dominated and the cooling system for the vessel, in which the nuclear reactions take place, must at all times be under absolutely reliable control.

Very often, naturally cold water flow can be used directly for this purpose. But since the number of nuclear power plants keeps going up constantly, those possibilities turn out to be increasingly scarce.

On the other hand, having short pipelines is a very important consideration. To solve this problem, we have durable and reliable cooling machines which can be used anywhere they are needed.

The Carrier refrigeration machines were installed in most of the nuclear power plants in the United States and in other countries throughout the world; they met approximately 80 percent of the requirements of the nuclear power plants existing today in the United States.

The first refrigeration equipment of the centrifugal type in the world was built by Carrier more than 50 years ago and this company has been a continuous leader in its field at all times.

The production of these machines, destined for the nuclear field, must be backed up by precision and quality without any possibility of failure, down to the last detail.

Some of these production parts are controlled by computers to assure the necessary tolerances. Pressure tests, x-rays, and other quality control procedures guarantee the kind of accurate and permanent operation for which the equipment was designed.

On the other hand, this work is done by engineers and skilled workers trained in this type of production so as to guarantee quality control during each of the steps involved in the construction of these machines from the order itself until final delivery.

In view of the unavoidable safety considerations, which must be increasingly emphasized in nuclear plants subjected to public criticism, any component in the nuclear plant must be reliable and highly accurate and of course we cannot overlook the cooling machinery here.

The reactor vessel cooling system is one of the places where the dissipation of heat must not exceed certain limits under any circumstances.

Another highly critical place is the control room area where highly sensitive electronic equipment cannot be subjected to an increase in temperature without serious risks to the safety and continued operation of the plant. Hence the need for using reliable and highly tested cooling equipment to assure the public and to guarantee safety in places where these plants are built.

The above-mentioned machines are very reliable for this type of operation. They are produced under a highly demanding quality control program with permanently updated manufacturing procedures which are required to obtain the "authorization certificate" from the American Society of Mechanical Engineers which authorizes the use of the simple "N" for centrifugal cooling units.

For this purpose we have a nuclear quality safety manual which in detail spells out all of the procedures required for specification regarding pipes, steel plates, soldering rods, etc., thus making it possible to keep track of all of the processes going back to the welding date, detailed specifications on the rod and even the number of the welder; all of these data are filed and they finally lead to the "N" stamp on the vessel identification plate.

The firm of Lix Klett SAIC—licensed by the Carrier Corporation for the production and installation of all of its products—has had an opportunity to collaborate in its special field in the development of nuclear power plants and supplementary activities involved there, such as they are now being built in the Republic of Argentina.

We might mention here the installation of refrigeration systems and air distribution systems in the Atucha I plant, in the building called the switchboard [control-room] building whose blueprints were prepared by one of its engineers at Siemens AG, in Erlangen.

In the computation and neutron flow measurement sector the company also supplies air conditioning and in the machinery building we did the mechanical ventilation work whose purpose is to draw out the large volume of heat generated by the machinery and by the circulation of the flow in the pipes. In all of those cases, the machines are always installed with one reserve machine for safety reasons.

Our company has also supplied the complete refrigeration plant, with four centrifugal compressors of 310 tr, each, for the Embalse Rio III nuclear power plant. In that plant we are also installing the airconditioning in the control panel room.

The airconditioning for the turbine room is obtained by means of 42 airconditioning units through which water from the lake is circulated and that water is later on returned to the lake.

A series of extractors and heat-fans, installed in the same room, provides adequate ventilation. Through automatic controls, we control the opening and operation of the extraction system. By way of illustration I might mention that it takes 2,380 hp to operate the thermomechanical installation.

In the supplementary building connected with nuclear power plants we might mention the nuclear fuel elements factory whose airconditioning and mechanical ventilation systems have been ordered and are now being finished by our company.

Among the special sectors in that factory we might mention the sector dealing with the shaping of uranium rods which are used in the nuclear power plants at Atucha and in the future ones at Rio III.

The "uranium pellets" sector must also be mentioned here; this is where the pellets are shaped and machined.

The metallography and materials testing sector and the beryllium and uranium sector are of special interest in view of the fact that their ventilation systems require an absolute filtering system so that the air eliminated

to the outside can be expelled into the atmosphere without causing any contamination.

The cooling plant for this building consists of three multicompressor machines totalling 350 tr. The airconditioning is obtained through 24 units used for air treatment. We have installed 62 mechanical ventilation units and the total installed power comes to 1,275 hp.

As we can see, the thermomechanical installations are highly important in everything relating to the nuclear sector and the technology used for these installations is the result of long experience in the refrigeration and air conditioning industry necessary to adapt and implement the quality controls required worldwide for the production of each of the elements involved.

Material Supply, Assembly

Buenos Aires LA PRENSA in Spanish 7 Nov 79 p 15

[Text] Continuing our series of interviews with the managers of enterprises involved in the Argentine nuclear plan, we interviewed Dr Engineer Marcello de Vincolis, general manager and deputy director of IECSA, S.A.

[Question] What services does your company offer?

[Answer] Operating as a general contractor in various industrial fields, it offers engineering services, material supply, and assembly. Recently established, it has accomplished and is now accomplishing various projects under the Argentine nuclear plan. Among these we might mention maintenance work for nuclear electric instrument installation at the Atucha Power Plant--tasks which, since they are accomplished in the reactor area itself--require advanced planning and phase-by-phase execution because, even when the power plant is shut down, you have a radiation field of a certain intensity.

To do that we had to employ several teams to do the same job because they could remain in the area only for a limited time so that the team members would not receive radiation doses in excess of those permitted.

Using this work system we handled the maintenance on the electrical connections of the control rod; we installed displacement sensors and sensors for efforts at certain points in the heavy-water pipelines as well as their corresponding interconnection with the multichannel recording instruments; we also laid communications networks.

We furthermore participated in the construction of the nuclear power plant at Embalse Rio III. We already handled the supplementary electrical assembly work for the various heavy mechanical equipment units. The most important work done in that place includes the assembly and testing of the

instruments for the turbogenerator and the supplementary equipment of the power plant.

We have professional personnel who participated in similar projects in Europe, such as the Caorso Nuclear Plant in Italy. That international experience comes on top of the experience already obtained through various installations of the conventional type in Argentina.

I must add that the work started at Embalse is one of the main lines of enterprise activity, such as the installation of instruments and controls, ranging from partial engineering supplies and/or assembly all the way to "turnkey" delivery of automatic process control systems.

This type of job comes on top of work in the other enterprise sectors (mechanical installations, communications, transportation, and electric energy distribution systems and others) so that we can presently offer the partial or total supply of a broad range of installations, from hospitals all the way to petrochemical plants, by ourselves or with the support of associated enterprises, in the certain knowledge that we can meet the client's requirements with maximum efficiency.

Basic Parts Production

Buenos Aires LA PRENSA in Spanish 7 Nov 79 p 15

[Text] The Rio Santiago shipyard, which is under State Shipyard and Naval Factories, Incorporated, has great experience in the areas of pattern shop, welding, molding, melting, etc., as well as equipment enabling it, for quite some time now, to turn out cast parts for big ship engines, components for hydraulic turbines, and, presently, also nuclear components, specifically, double-volute pump frames for the moderating circuit in an atomic power plant and for the cooling circuit in the wall.

The technicians consulted added that the catastrophic consequences in terms of personnel and the other results of an accidental shutdown of a nuclear power plant due to the lack of electric energy supply mean that the quality level demanded in the construction of this type of component must be the highest.

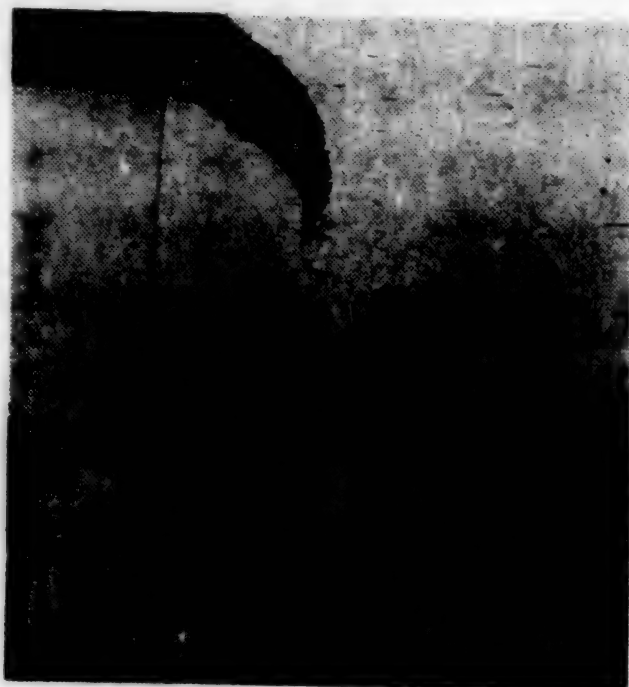
In the case of the pump made at the shipyard, they added—pumps which are used in the moderating fluid circuit for the nuclear reaction in the reactor and for cooling the core in case of an accidental shutdown—that quality assurance is required in accordance with international standards (Z-299.1 of the Canadian standard association, in this case).

This includes supervision and recording of all activities dealing with the components (destructive and nondestructive testing, design, control and testing instruments, documentation, etc.) and all of those activities

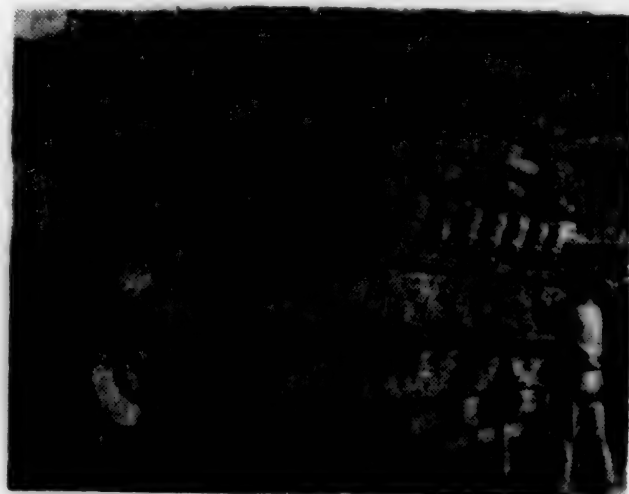
which are carried out by the subcontractors who supply the parts that will go into the final product. It is also necessary to organize periodic inspections of the entire manufacturing system to make sure that the procedures applicable in each area (summarized in the Quality Guarantee Manual) are faithfully implemented.

The production of components with these very complex characteristics, requiring very tight tolerances, becomes impossible—the engineers pointed out—without adequate machine-tool equipment making it possible to achieve those tolerances even in voluminous parts that are difficult to handle. The shipyard has for some time now had its own milling machines which are numerically controlled and other likewise highly precise machines.

Finally they said that all of the tools and equipment "no matter how advanced they may be, would be useless if we did not have a technically trained team with specialized engineers and skilled workers and with sufficient experience to get the most out of the equipment. This is also true of our shipyard whose products compete internationally."



Steam generator for the Embalse power plant. This is one of the four supplied by NUCLAR. They are being transported by means of modular trucks with articulated dimension, specially designed by the enterprise for this type of work.



One of the electric power generating sets supplied by FIAT for the Embalse Power Plant.

5058
CSO: 5100

ARGENTINA

AMBASSADOR TO FRG DENIES 'CONDITIONING' OF NUCLEAR AGREEMENT

PY13170/ Buenos Aires TELAM in Spanish 1145 GMT 12 Nov 79 PY

[Text] Buenos Aires, 12 Nov (TELAM)--Roberto Guyer, Argentine ambassador to the FRG, denied press reports stating that the contract to provide Atucha II with a nuclear reactor would be conditioned, i.e., that the contract would demand new guarantees stipulating that nuclear energy would be used for peaceful purposes.

In this regard the ambassador stated that negotiations "are following their normal course" and that "the German Government will have to give its approval to the contract beforehand, which is something already known. They are still reviewing it, and absolutely nothing new has happened here."

During a telephone conversation with a radio station, Guyer asserted that "for the time being I see nothing new." He said: "Naturally, in human life unforeseen events can occur, but I have seen nothing new so far. There is good will on the German Government's side," he added, "and I believe there is a good understanding among our government, the authorities of the National Atomic Energy Commission (CNEA) and the corresponding German authorities." Finally, the ambassador stated that his diplomatic tour "continues to be very positive" and that in the FRG "there is a good feeling toward Argentina." Ambassador Guyer was interviewed during the "Ford Noticias" program of Radio Belgrano.

CSO: 5100

MADERO REPORTS TO VIDELA ON ATUCHA II NEGOTIATIONS

Buenos Aires LA NACION in Spanish 17 Nov 79 p 18

/Text/ Topics connected with the Atucha II atomic power plant and the heavy-water plant were taken up yesterday around noon by RAdm Carlos Castro Madero, in a briefing for the president of the nation.

The report covered the current status of the project ordered in decree 2441/79 pertaining to the approval and accomplishment of tasks connected with the construction of the Atucha II atomic power plant as well as the heavy-water plant.

As for Atucha II, dispatches from Bonn in the past several days gave the impression that it was hoped that the Argentine government would accept the conditions requested by the government of the FRG concerning the delivery of the reactor which would be supplied by a German company.

The chairman of the CNEA (National Atomic Energy Commission) informed Lt Gen Jorge Rafael Videla, Ret., on the aspects which the board of governors of the IAEA will take up. The discussions will start on 28 November in New Delhi and RAdm Castro Madero will attend.

In Salta

Shortly before going to this capital, where he was received by the president of the republic, RAdm Castro Madero said that a nuclear power plant would be built in Salta, Tucuman or Santiago del Estero.

The CNEA chairman also announced that the record output during this season at the deposit in the Tronco Valley, in the Calchaquies Valleys, came to 40 tons of uranium.

Concerning possible cooperation with Brazil, the officials said that although that country shows other reactor systems, there are many fields in which one can work together.

ARGENTINA

SIEMENS, MARTINEZ DE HOZ DISCUSS ATUCHA II REACTOR DEAL

Buenos Aires LA NACION in Spanish 20 Nov 79 p 10

/Text/ The economy minister will today meet for a "working luncheon" with Mr Peter Von Siemens, chairman of the board, Siemens A. G. /Incorporated/, of West Germany, with whom he will basically take up the problem that arose in connection with the supply of the reactor for the Atucha II power plant and the expansion of the communications industry in the country.

Mr Siemens has been in Argentina since yesterday, having arrived together with his son Peter Carl Von Siemens, who is general-manager for the American regional area, in the central administration section for the company's foreign operations.

It was learned that the visitor would remain in Argentina until Friday and would confer with the president of the nation and with other government officials; he would also be briefed on the progress of the enterprises of the Siemens group operating in Argentina.

It turned out that, on the occasion of the meeting with Dr Martinez de Hoz, the problems arising in the West German parliament would be taken up on a priority basis; those problems deal with the approval of the supply of the nuclear reactor for Argentina, to be used at the Atucha II power plant; it was produced by a German enterprise belonging to the Siemens group.

5058
CSO:5100

MADERO PRESIDES OVER SEMINAR ON NUCLEAR FUEL

Buenos Aires LA PRENSA in Spanish 20 Nov 79 p 14

/Text/ A ceremony held at the General San Martin cultural center opened the regional seminar on quality in nuclear fuel technology, recognized by the CNEA (National Atomic Energy Commission) under the auspices of the IAEA.

The ceremony was presided over by CNEA chairman, RAdm Dr Carlos Castro Madero and was attended by the undersecretary of energy, engineer Bernardo Bronstein; the scientific secretary of the IAEA, Dr G. Sukhanov; and other officials.

The seminar, whose meetings will continue until Friday, is intended to brief scientists and engineers on the international situation in the matter of nuclear fuel technology quality and techniques for its evaluation.

The meeting is attended by experts from Argentina, Germany, Belgium, Canada, United States, France, England, Japan, Norway, and Russia as well as participants from Argentina, Bolivia, Brazil, Korea, Chile, Japan, Mexico, Peru, and Uruguay.

Castro Madero Remarks

In opening the seminar, RAdm Castro Madero stressed the fact that this will make it possible "to raise the level of knowledge in an area that is so important in nuclear technology since the availability and safety of nuclear power plants depends to a great extent on the quality of nuclear fuel supply while at the same time it directly influences the cost of power generation."

He then sketched the stages of the Argentine nuclear plan and added that the country "has tackled the construction of installations required for self-sufficiency in the fuel cycle which demonstrates a clear and determined intention to achieve autonomy in the peaceful use of nuclear energy." He then explained that "the installations required for the overall handling of nuclear fuels technology, made up of pilot plants, experimental hydrodynamic circuits, hot cells, and irradiation reactors, complement the

industrial production installations and are evidence of the seriousness with which the country contemplates this technology."

Later on, Castro Madero said that the IAEA decision to sponsor the seminar was correct and he stressed the value of the recommendation drafted along these lines by that organization's international study group on nuclear fuel performance and technology.

The CNEA chairman finally emphasized the volume of studies submitted "which guarantee the value of this conference and which will enable us to arrive at conclusions of general importance and practical applications through the publication which the agency will put out later."

5058

CSO:5100

CAMILION: NUCLEAR COOPERATION WITH BRAZIL A POSSIBILITY

Buenos Aires LA PRENSA in Spanish 18 Nov 79 p 3

/Text/ Brasilia, 17 November. Argentine ambassador Oscar Camilion today confirmed the possibility that his country might sign a nuclear cooperation agreement with Brazil.

"Brazilian-Argentine nuclear cooperation is a sure possibility for a way that opens up many prospects," the diplomatic representative commented in talking to newsmen.

Diplomatic sources in Brasilia believe that cooperation in the nuclear area will be the main topic to be taken up by the president of Brazil, Gen Joao Baptista Figueiredo with his colleague, Jorge Rafael Videla, during the trip he will make to Argentina probably in March.

According to observers, the meeting of both chiefs of state "will not miss the opportunity of planning a nuclear cooperation agreement" since, as a local diplomatic source pointed out, "there is no conflict here and there is no cooperation here either."

Since confrontation is not in the interest of either two countries, logic would indicate that there would have to be cooperation and the only thing is to spell out how that would be done.

It is not ruled out that Argentina might export advanced technology to Brazil which would even facilitate the possible production of nuclear weapons in the future, by Brazil, while the former would in exchange offer its uranium prospecting technology.

The nuclear accord signed between West Germany and Brazil in 1974 does not call for the export of advanced technology.

5058
CSO:5100

BRAZIL

FORMER HEAD OF NUCLEI CRITICIZES NUCLEAR ACCORD WITH FRG

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 26 Oct 79 p 6

[Text] The former director of NUCLEI, NUCLEBRAS [Brazilian Nuclear Corporations] Isotope Enrichment, Inc., Joaquim de Carvalho, said yesterday before the CPI [Congressional Investigating Committee] investigating irregularities in the Brazilian nuclear program, that the agreement signed with Germany makes the government vulnerable in four areas: economic, psychological, political and military, and for those very reasons weakens the internal security of the country. It is the belief of the former NUCLEI director that the NUCLEBRAS subsidiary should come under the control of ELETROBRAS [Brazilian Power Companies, Inc.] because he believes that this would make its objectives compatible with the timetables on the generation of electrical power.

After saying that the nuclear program should stop at the powerplants already planned, Joaquim de Carvalho charged that the students sent to Germany "are very young, and although hardworking and studious, they do not have the practical experience necessary to find, select and absorb the technology that is truly important." In his opinion, that type of training "is very expensive because each student costs Brazil nearly 700,000 cruzeiros per year in addition to another 65,000 marks paid by the German Government to Kraftwerk Union as a student fee."

Criticisms

Joaquim de Carvalho, who after 3 years as NUCLEI director withdrew last March, said that on the basis of plans available in NUCLEBRAS up to that time, the program for construction of nuclear powerplants should be intensified beginning 1980 because hydroelectric potential, it was believed, was on the order of 100,000 megawatts and would be practically all in use in that year.

The program thus conceived, according to Joaquim de Carvalho, would generate a market so promising for nuclear components that it would justify an intensive activity of promoting industrial establishments to make them capable of producing those components in Brazil. After saying that there was even the preclassification of companies in the sector, the former NUCLEI added that mergers and associations were prevented, primarily benefitting national firms.

According to the deponent, however, NUCLEBRAS maintained its position that the 8 powerplants should be built by 1990, justifying its position with alleged forecast of a shortage of electrical energy in 1975, based on the premise that the economically usable Brazilian hydroelectrical potential was less than 100,000 megawatts and that the country should have an installed capacity of 81,000 megawatts in 1990, of which 10,000 would mandatorily be allocated to nuclear powerplants. According to Joaquim Carvalho, forecasts for 1995 were for an installed capacity of 125,000 megawatts, of which 26,200 megawatts would be produced by nuclear powerplants. By the year 2000, NUCLEBRAS planned an installed capacity of 185,000 megawatts, of which 75,000 would be nuclear.

In the second half of 1978, however, the deponent said, new figures began to appear as to the true hydroelectric potential of Brazil, with ELETROBRAS declaring that there would be more than 150,000 megawatts. Further on, according to Joaquim de Carvalho, it was learned that the figure would reach 205,000 megawatts, not counting small powerplants or the potential of some Amazon region rivers. He also added that NUCLEBRAS did not accept the ELETROBRAS estimates, considering them unofficial.

Technology

Joaquim de Carvalho considered the transfer of technology to be nothing more than sale of technical assistance services linked to the sale of patents and manufacturing licenses, which, in his opinion, does not mean that Brazil is going to absorb the basic technology that will allow a future self-sufficiency in the area of nuclear powerplants. As far as he is concerned, technological self-sufficiency does not exist "in absolute terms," because the nations which import the most technology "are also the ones which create the most technology," in that respect pointing out that careful studies should be made of what he called the technological balance between Japan and the United States. He said that when he was still in NUCLEI he even proposed the participation of the Sao Paulo Institute for Technological Research--as well as that of other similar entities--in the Brazilian nuclear program because he believed that it would be the only way for the country to avoid the "almost unavoidable" tendency to remain as dependents on technology developed in industrialized countries, "which forces the country to spend astronomical amounts in foreign exchange every year just to buy more manufacturing instructions when it is merely a matter of updating technologies previously transferred." After praising the Brazilian industrial park, Joaquim de Carvalho said that units such as

Unicamp; the Material Engineering Department of the University of Sao Carlo; the CTA [Technical Aerospace Center], the Technological Center of the University of Santa Catarina, to cite a few, are also qualified to become part of the national nuclear program. He added that the transfer of technology directly from German to Brazilian firms, in his opinion, encounters "an insurmountable structural obstacle: national companies, contrary to what happens with the German, do not have research and development departments to absorb, establish and adapt the technology whose transfer is desired."

After several remarks about the national hydroelectric future, Joaquim de Carvalho added that after ELETROBRAS announced that Brazil has a potential of more than 209,000 megawatts in that area, "it became obvious that there is no urgency for purchasing technology abroad with gold for the construction of nuclear powerplants for the generation of electricity, simply because it is much easier and cheaper to generate electricity in hydroelectric powerplants."

8908

CSO: 5100

NUCLEBRAS CRITICIZED FOR INVESTING IN JET NOZZLE PROCESS

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 23 Oct 79 p 6

[Text] Brazil is going to spend nearly \$1 billion, practically alone, on the installation of a demonstration plant for the jet centrifuge process of enriching uranium, without any guarantees by the German companies Steag and Interatom that the process has been technically tested or economically practical. Whatever the result, therefore, the two companies do not have the obligation of increasing their financial share in the endeavor, NUCLEBRAS [Brazilian Nuclear Corporations] being obligated to shoulder all future commitments.

According to the NUCLEI [NUCLEBRAS Isotope Enrichment, Inc.] stockholders agreement resulting from the nuclear agreement signed in 1975 with West Germany, the Germans will contribute only 50 million marks (\$29 million) of a total capital of 600 million marks (\$350 million). NUCLEBRAS, however, is putting up 150 million marks of its own money (making up the rest of the capital of 200 million marks) and another 400 million marks obtained through foreign financing.

In addition to that, the shares of stock for Steag and Interatom (25 percent of the total), are being obtained progressively through the sale of equipment--without international bids--and services. Another fact which is worrying the members of the nuclear Congressional Investigating Committee [CPI], which only now is having access to the official documents of NUCLEBRAS, is the constant revision of costs. The demonstration plant, which will serve only for testing the "jet nozzle" process (jet centrifuge), whose technical or economic practicality is far from being confirmed, was initially budgeted at 600 million marks (nearly \$350 million) in 1975 and now it is estimated will cost 1.6 billion marks (\$900 million).

"The serious thing about all that," said one of the legislators, "is that no one, absolutely no one, can tell us what the final price will be and much less guarantee its technical viability. As far as economic viability is concerned, we no longer believe in it because the inventor of the method himself, Professor Erwin Becher, who testified before the CPI today, confirmed in an interview granted in Rio de Janeiro, that the cost of enriched uranium produced by that system will be 3.5 times greater than that now on the international market."

The scientist was more cautious, adding that with an increase in the size of the plant and the development of technology "in around 5 years we shall be able to come close to the international cost of enrichment." This means that after investing between \$900 and \$1 billion (with readjustments it could be more), Brazil still runs two risks: the process will not be approved industrially and the endeavor will have to be halted, and, at any rate, that Brazil will not be able to export enriched uranium because of the costs admitted by the inventor of the process himself.

The work of installing the demonstration plant is lagging and Brazil will have to import enriched uranium to load the three nuclear powerplants at Angra (200 tons each) and even more, it will have to pay for the enrichment of the reloads for these and the other powerplants which may be installed, at least up to 1990, at 64 tons of enriched uranium per reactor.

If these figures are true, and it seems that there is no doubt about it, the German companies have nothing to lose. On the contrary, they will also sell equipment. The only loser will be Brazil.

8908

CSO: 5100

PHYSICIST DEFENDS JET NOZZLE ENRICHMENT PROCESS

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 23 Oct 79 p 6

[Text] Professor Erwin Becker, inventor of the jet centrifuge uranium enrichment process (jet nozzle), which is being developed under the Brazil-Germany nuclear agreement, said yesterday in Brasilia that the process developed by him becomes economical as the size of the commercial enrichment plants is increased.

He explained that when Gen Dirceu Coutinho, the former superintendent of NUCLEI [NUCLEBRAS [Brazilian Nuclear Corporations] Isotope Enrichment, Inc.] declared last week before the Senate Nuclear Investigating Committee that the jet centrifuge process was uneconomical and not yet sufficiently tested, he was relying on estimates of costs of small plants, moreover, he did not take into account that the process has already been perfected in recent years.

Professor Becker will make a complete explanation about the process he invented to an audience consisting, not only of senators, but scientists and persons interested in the subject, when he speaks today before the Senate investigating committee which is looking into the nuclear agreement signed between Brazil and the FRG.

The professor will also make a report on the present phase of research in the process and he will say that it is economical and may be used by Brazil for fueling its nuclear powerplants as well as for obtaining foreign exchange. Based on the presupposition that Brazil already has measured reserves of 200,000 tons of uranium, he anticipates that the country will be able to export enriched uranium worth \$40 billion overall, double what it would obtain from the sale of yellow cake.

Finally, he reported that the uranium enrichment pilot plant to be installed in Belo Horizonte is already being transported from Germany to Brazil and should arrive between 5 and 15 November. It should go into operation within 3 to 4 months.

In Rio, the visit by German legislators to the Angra dos Reis powerplant project on Saturday, was practically a courtesy visit and did not lead to any political questions on the nuclear program and the agreement with Germany. Accompanied by the planning director of FURNAS [Brazilian Powerplants] Luis Cals, the seven deputies lost interest after learning that FURNAS was only an operational agency of the nuclear program without any decision-making power.

The delegation went on to Curitiba and later goes to Recife and Brasília, at which time the nuclear program will be discussed.

8908

CSO: 5100

BRAZIL

PHYSICIST ALLEGES NAZIS CONNECTED TO FRG NUCLEAR INDUSTRY

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 28 Oct 79 p 30

[Text] The president of the Brazilian Physics Society, Professor Mario Schemberg, one of those threatened by an alleged Nazi Reorganization Movement (MRN), whose activities are being investigated by Sao Paulo police, yesterday revealed a telephone recording in which a voice with a German accent ordered him not to reveal the name of a former member of the SS during World War II, who today is an important member of the German Nuclear Commission in charge of the technical personnel sector in Brazil and South Africa.

Professor Schemberg not only revealed the new recording made the day before yesterday, but he also revealed the name that the alleged members of the MRN would prefer to remain unknown. It is Alfred Boettcher, member of the former Nazi Party, with number 551669, and a member of the SS with serial number 311376. Boettcher was the director of Degussa, which produced secret weapons and metallic uranium for heavy water reactors during the war, when he was also the SS commander in Leiden, Holland.

On 12 May 1949, he was sentenced to 18 months in prison at the Hague for economic crimes during the war. However, despite that, Schemberg charged, he remained as director of Degussa until 1960, when he became the director of the Julich Nuclear Research Center on the border with Holland. In 1966, Dutch newspapers investigated his past as an SS Obersturmbannfuhrer, which resulted in a protest by the Dutch Government and his subsequent removal from the post.

Three years later, continues Schemberg, Boettcher was selected to coordinate technical personnel for nuclear collaboration between the FRG and Brazil as a result of the technological agreement signed on 9 June 1969. The following year he visited Brazil and South Africa several times. Germany has another nuclear agreement with South Africa (South Africa has already managed to produce an atomic bomb using Uranium 235 at the plant at Pelindaba).

Secrecy

The initials of the MRN only became known after the break-in of the home of physicist Mario Schenberg by two persons, who attacked his wife Lourdes Cedran, and several telephone threats were made to Sao Paulo physicists, members of the plastic arts and businessmen such as Jose Mindlin, Claudio Bardella, Fabio Magalhaes, Anesia Pacheco Chaves, Mario Gruber and others.

At first, Schenberg as well as the others threatened decided to maintain secrecy about the affair until the police solved it, however, due to the delay in investigations, they concluded by informing the press. A strange fact was revealed: although the Sao Paulo secretary for security himself, Octavio Gonzaga Junior, believed the problem to be of little significance due to the lack of proof and other evidence, the commissioner-chief of the DOPS [Department of Political and Social Order], Romeu Tuma, hinted that the charges could be false and those making the charges could even be punished in the future for that reason.

According to Mario Schenberg himself, the fact that the majority of the persons threatened have been noted for their liberal or left wing political positions may have contributed to this state of things. However, when businessman Jose Mindlin appeared at the DOPS to discuss the same affair (he was also threatened), investigations were intensified to such a point that student Walter Jose Niessner, a student of physics and iron and steel making in Germany, was arrested the day before yesterday as a suspect but was considered to be innocent.

Somewhat irritated by the behavior of security authorities (although a patrol car is permanently guarding the door of his house), physicist Mario Schenberg said yesterday that investigations should be intensified, it being of no consequence whether the alleged members of the MRN are a small group of psychopaths or an organized political force. At any rate, the Commission for Justice and Peace of the Curia of the Archdiocese of Sao Paulo, which is also looking into the affair, should send the police the results of an investigation made on its own account through a foreign technician.

That technician examined the telephone recordings and, at least with respect to one of the voices, he concluded that it belonged to a German woman of more than 50 years-of-age, who has lived in Paris and speaks more than one language, probably Spanish and Italian, because several times she pronounced the word "Judeu" as "Rudeo, also referring to the word "left" as "la sinistra."

All the threats, in addition to racial attacks on Jews, contain references to the nuclear agreement, which according to Schenberg, could lead to several hypotheses. One of them, "considered absurd by some, but always a hypothesis," is that it is really a matter of a Nazi or neo-Nazi group

with military interests in the nuclear agreement. By their threats, this group would like, not only to intimidate physicists and intellectuals who advocate a revision of the agreement, but to pressure the "hard" line military sectors to bring about the opposite, that is, no revision of the agreement, whose cancellation appears imminent.

"That question about the reorganization of Nazi groups is a phenomenon which is taking place in many countries of the world. It is a fact which should not be underestimated," said Schemberg. "In one of the telephoned threats to Professor Fabio Magalhaes, they said: 'We were reborn at Itatiaia.' I ask myself, therefore, why were the investigations pigeonholed on the Nazi meeting in Itatiaia in Rio a little more than a year ago?" Indeed, the only practical result of the charges made on the Itatiaia meeting was the arrest of former Nazi (SS) officer Gustav Franz Wagner, recently released after being held for several months in Brasilia while he waited the decision of the proceedings on his extradition. Wagner, who was arrested in good health, left prison emotionally unbalanced.

"In one of the telephone threats," says Schemberg, "one of the voices let out some things on that subject. They gave to understand that one of them visited Wagner in prison and gave him medications for the purpose of unbalancing him, in an obvious attempt to silence him. Nothing can be proved in that respect but it would be well to investigate it."

The Nazi danger, moreover, should not be ignored, says Mario Schemberg, exhibiting a document in which the president of a Brazilian branch of "Ecological Resistance," (one of the most powerful political groups opposing nuclearization in Germany), Otto Buschsbaauer, lists a number of persons--businessmen and scientists--with ties to the German nuclear industry, who were previously known by their Nazi affiliations.

In addition to Alfred Boettcher, former SS commander, there is the name of Karl Winnacker, doctor in chemistry, who as the director of I.G. Farben, produced the Zyklon B gas during World War II used to exterminate people in concentration camps. Winnacker was a member of the Nazi Party and of the SA [expansion unknown]. From 1952 to 1969 he was director of Hoechst (successor to I.G. Farben, which was considered a "criminal company" by the allies) and later vice president of the Karlsruhe Nuclear Research Center, vice president of the German Atomic Commission and president of its reactor section.

Schemberg also recalls an event that was given little attention by the Brazilian press: In 1972, nearly 60 Brazilian officers visited the FRG on the pretext of visiting the Leadership Academy of the "Bundeswehr." Actually, they were nuclear specialists, who spent the major part of their time at the Julich Nuclear Research Center and at the nuclear reactor plant at Muhlheim Ruhr.

"The nuclear agreement," concluded the president of the Brazilian Physics Society, "Involves commercial and economic questions but it is not entirely impossible that it also involves military questions of a secret nature. The Germans cannot produce bombs in their territory, as is known."

He insinuates: Bombs can be produced in Argentina, Brazil and South Africa. He is aware that by specualting on such subjects he can make himself ridiculous, but it is a risk that is taken, even though the objective of the alleged members of the MRN is this: make some intellectuals of the left, liberal businessmen and physicists, who oppose the agreement, appear to be ridiculous and therefore "without credibility." For example, in the telephone recording revealed yesterday the threatening voice said precisely this:

"The police cannot spend their entire life at your door. You are going to become ridiculous."

8908

CSO: 5100

URANIUM RESERVES SET AT 250,000 TONS

Rio de Janeiro O GLOBO in Portuguese 28 Oct 79 p 6

[Text] Brasilia (O GLOBO)—Brazilian uranium reserves already measured reach 240,000 tons, and with the prospecting to be carried by the end of the year, they could reach 250,000 tons. This represents an increase in measured reserves of nearly 25 percent compared to the figures revealed in April of last year, when the reserves were 193,800 tons, it was reported by a high source of the nuclear sector.

The increase in Brazilian uranium reserves will be announced officially in December by Minister of Mines and Energy Cesar Cals. The source of the sector explained that the increase in reserves should be obtained almost entirely because of the positive results obtained in the geological reserves of Itatiaia, Ceara, where already measured reserves at the beginning of this year reached 48,000 tons, while possible reserves were estimated at 74,000 tons.

The same source declared that the geological reserves of Campos Belos in Goias and Lagoa Real in Bahia, already show an increase in measured reserves, although in a lesser dimension than those confirmed in Itatiaia, considered the largest geological uranium reserve in the country.

In Campos Belos, according to official figures revealed up to now, measured reserves are 500 tons. In Lagoa Real, the possible reserves are estimated at 5,500 tons of uranium.

As the source of the sector explained, Brazilian uranium reserves of 250,000 tons will be enough to supply 50 reactors of 1,300 megawatts each. Each 1300-megawatt reactor consumes approximately 5,000 tons of uranium during its 30 years of life.

Brazilian uranium reserves, measured and indicated, jumped from 32,300 tons in 1977 to 63,800 tons last year, and to 193,900 tons this year. Of this total, 183,800 tons are NUCLEBRAS [Brazilian Nuclear Corporations] reserves and 10,000 tons belong to NUCLAM [NUCLEBRAS Mining Assistance, Inc.], subsidiary company of NUCLEBRAS, which holds 75 percent of its capital, the remaining 25 percent belonging to the German companies Steag and Interatom. Through the NUCLAM stockholders agreement, 20 percent of the reserves discovered by the company will be sold on a priority basis to Germany in the most concentrated form possible.

BRAZIL

ELETROBRAS ALLEGEDLY NOT PLANNING NEW NUCLEAR PLANTS

Rio de Janeiro JORNAL DO BRASIL in Portuguese 1 Nov 79 p 17

[Text] The president of ELETROBRAS [Brazilian Power Companies, Inc.] Mauricio Schulman, revealed yesterday that ELETROBRAS is not making any site surveys with the view to the installation of new nuclear powerplants. He added that he had no knowledge that NUCLEBRAS [Brazilian Nuclear Corporations] is making site surveys in Espirito Santos for that purpose. ELETROBRAS is the agency responsible for the construction of nuclear powerplants.

According to Mauricio Schulman, "The Ministry of Mines and Energy did not order ELETROBRAS to make those surveys nor did ELETROBRAS make any proposal in that respect to the ministry." He did not reveal when the agency intends to begin the studies.

Deficit

As to the possibility of a deficit in the supply of electrical power in the early years of the next decade, Mauricio Schulman declared that the danger does not exist for next year because this year has been an "exceptionally good hydrological year," and all the reservoirs of the south and southeast region are full. "By 1981 there will be a reasonable degree of security," he said, "and as far as 1982 is concerned, it is not yet possible to make any accurate forecasts. If as of now a critical period of drought were to begin, then there would be the danger of a collapse of supplies in 1982." The problem period is the one which runs up to 1982, because the following year the Itaipu hydroelectric complex goes into operation.

The president of ELETROBRAS admitted that there is the possibility that the Ministry of Planning, when it centralizes control of state companies, could adopt decisions tending to reduce expenditures in the electrical sector, which would result in restrictions of the supply of electrical energy. "However, to govern means to select priorities," he said. "There is a concentration of projects to be carried out in the sector, which require a greater financial effort than that of recent years. We either

seek the necessary resources or we cut back the program, running the risk of cutting back supplies. That is a decision to be made by the government."

More Resources

Yesterday, Light signed a contract with the BD of Rio [Rio Development Bank] for the opening of a line of credit established at 500 million cruzeiros to finance the purchase of machinery and equipment which will allow the company to expand its electrical power transmission and distribution services and increase the reliability of the service to the public. The loan allocated to Light was handled through FINAME [Fund for the Financing of Machinery and Equipment].

According to the president of Light, Luiz Oswaldo Aranha, the financing received is 15 percent of the total investment by Light in the state of Rio de Janeiro. He described the expansion of the supply of power to industries in the municipalities of the state and surrounding areas of the city as a priority. Aranha also said that Light is technically able to rehabilitate the quality of its services, which he himself considered lacking in several aspects, in a period of three years.

8908

CSO: 5100

BRAZIL

NUCLEAR AGREEMENT TO BE NEGOTIATED WITH MEXICO

Rio de Janeiro O GLOBO in Portuguese 1 Nov 79 p 21

[Text] Brasilia (O GLOBO)—The Brazilian and Mexican Governments should reinitiate negotiations for signing an agreement for the peaceful use of nuclear energy during the visit by Secretary of Foreign Relations Jorge Castaneda to Brasilia, which begins on 13 November, for the first meeting of the Brazil-Mexico Coordination Committee.

The news was provided yesterday by a high Mexican diplomatic source, who recalled previous talks held between the two countries when former Secretary of Foreign Relations of Mexico Santiago Roel, visited Brazil in March. Roel talked with former Minister of Mines and Energy Shigeaki Ueki on an exchange in the field of nuclear energy between the two countries and before returning to Mexico he met with Cesar Cals on the same subject.

Yesterday at Itamaraty, spokesman Bernardo Pericas said that he does not yet know officially of the subjects to be discussed by the two countries during the meetings of the Coordination Committee, but that with respect to nuclear agreements "Brazil is willing to cooperate with friendly countries." Still according to the Mexican embassy, petroleum should be another subject discussed by the two countries. Brazil has already begun to receive 30,000 barrels of Mexican oil per day and, according to the basic document on the meeting exchanged between the two foreign ministries, the Brazilian Government is going to propose an increase in imports of Mexican petroleum in order to reduce its dependence on Arab countries.

Uranium Bank

According to statements by Jose Borjon-Meto, first secretary of the Mexican embassy, Mexico favors an increase in trade with Latin American countries, particularly with the less developed.

"We favor a new world economic policy based on a better relationship between the industrialized countries and the producers of raw materials," said Borjon-Neto.

That policy, according to the Mexican diplomat, contemplates the development of underdeveloped countries and advocates research for new alternative energy sources to replace petroleum. At this time, Mexico is developing its nuclear policy on the coast of Vera Cruz, where it has two 650-megawatt reactors, using a process identical to that adopted by Brazil: enriched uranium. According to former Secretary of Foreign Relations Roel, in the year 2000 Mexico will be one of the six countries with the most uranium in the entire world. In the interview he granted in Brasília, Roel declared that Mexico intends to form a world enriched uranium bank for selling to countries with advanced technology.

According to the Mexican embassy, in the 3 days that the present Mexican Secretary of Foreign Relations Jorge Castaneda will spend in Brazil, he should also discuss agricultural exchange between the two countries and the visit by President Lopez Portillo to Brasília early next year.

8908

CSO: 5100

BRAZIL

ITAMARATY SPOKESMAN DENIES NUCLEAR ACCORD WITH ARGENTINA

Sao Paulo O ESTADO DE SAO PAULO in Portuguese 30 Oct 79 p 6

[Text] Itamaraty spokesman, counselor Bernardo Pericas, emphatically denied the report on the possibility of an alleged agreement being signed between Brazil and Argentina for the construction of an atomic bomb. Pericas pointed out that Planalto Palace spokesman Alexandre Garcia denied the report on Sunday, saying that the Brazilian nuclear program has "peaceful purposes."

The diplomatic spokesman pointed out that Brazil signed the Tlatelolco Treaty and, although it has not yet been ratified, "it is committed to its moral principles." That is why Brazil has a "known position" against the proliferation of nuclear weapons. Pericas, thought, however, that President Joao Figueiredo did not exclude any field of cooperation between Brazil and Argentina, which does not mean that there is the intention of building an atomic bomb, either alone or together.

The spokesman said that Brazil is engaged in nuclear cooperation for peaceful means and that in that aspect, its help is practically available to all Latin American countries, except Cuba, with which it does not have diplomatic relations.

8908

CSO: 5100

BRAZIL

SOUTH AMERICAN NUCLEAR COMMON MARKET ADVOCATED

Rio de Janeiro O GLOBO in Portuguese 25 Oct 79 p 28

[Text] Buenos Aires (O GLOBO)--Argentine lawyer Miguel Culaciati said yesterday that he proposes the creation with Brazil of the South American Nuclear Common Market--SUDATOM--in a paper presented to the congress of the International Association of Nuclear Law.

Culaciati, who is a specialist in this field, wants Brazil and Argentina to forget their rivalries in the nuclear area and explore the sector in the other countries of South America.

SUDATOM, planned along the pattern of EURATOM, of the European Common Market, will also allow the Latin American countries "to defend their right to access to the complete cycle of nuclear fuel technology," which means the production of plutonium, essential for the manufacture of nuclear weapons and for energy production.

"At this time, the United States continues with a hard line, but I believe that the American Government will have a favorable reaction to this proposal," commented Culaciati.

He also said that the Brazilian delegation to the congress of the association, delegation which does not represent the Brazilian Government, reacted positively to his proposal, which will be discussed today. The meetings of the congress, which began last Sunday, are behind closed doors.

Principles

According to the Argentine lawyer, the principles of SUDATOM already appear in the nuclear agreement his country has with seven other South American nations and which Brazil has with Venezuela.

"Practically the only countries which did not come to a nuclear agreement are Brazil and Argentina," precisely the most advanced in the field of nuclear technology, with a total of seven powerplants under construction and one already in operation: Atucha in Argentina.

the SUDATOM proposed by Culaciatí would have six basic objectives: Joint defense in the international forums of the right to access to nuclear technology and to the complete fuel cycle.

Creation of joint research groups.

Study of the creation of an integrated South American nuclear industry.

Control of the peaceful use of the atom and the prevention of damage to the environment.

Functioning as a regional center for the discussion of nuclear problems.

Construction of multinational nuclear installations for the benefit of member countries.

8908

CSO: 5100

BRAZIL

BRIEFS

NUCLEAR-POWERED SHIP--Rio de Janeiro, 3 Nov (AFP)--It was asserted here today that the Brazilian Navy will continue developing its plans to build a nuclear-powered ship in the country. The statement was made by Navy Minister Maximiano Eduardo da Silva Fonseca, who explained that the delays which have occurred in the implementation of the German-Brazilian nuclear agreement will not upset the plans his ministry is developing. [Excerpt] [PY041523 Paris AFP in Spanish 2138 GMT 3 Nov 79 PY]

CSO: 5100

EGYPT

ALEXANDRIA COUNCIL REJECTS NUCLEAR POWERPLANT

NC031453 Paris AFP in English 1054 GMT 3 Nov 79 NC

[Text] Cairo, Nov 3 (AFP)--The proposed construction of Egypt's first nuclear power station near Egypt's second city, Alexandria, has been unanimously rejected by the Alexandria Municipal Council in the light of the recent accident at the Three Mile Island power plant in the U.S., Al-AKHBAR paper reported here today.

The paper indicated that the council's veto will have a serious effect on Egypt's energy supply situation and could cause a three-year delay in the country's nuclear programme. This programme envisages the construction of some ten plants by the year 2,000, and the report said the decision could cost 100 million dollars a year with an additional charge of 3,000 million dollars for fuel for conventional power stations.

The plant was to have been built 30 kms (about 20 miles) west of the city at Sidi (krir). But the paper reported that Alexandria Governor Fu'ad Hilmi has sought a meeting with Egyptian President Anwar as-Sadat and has told him of the council's opposition. The report quoted Mr Hilmi as saying: "Alexandrians were unhappy with the choice of Sidi (krir) and had begun to circulate a petition, but the incident at the American Three Mile Island Plant hastened the matter--we were no longer able to say nothing."

CSO: 5100

INTER-AFRICAN AFFAIRS

BRIEFS

ENRICHED URANIUM DIVERTED--Several loads of enriched uranium, extracted from the air mines in northern Niger, are reported to have disappeared in transportation. These loads have reportedly been diverted toward Libya. The disappearance was discovered 2 months ago. One of the trucks carrying the casks of uranium has been found empty. It is possible to make at least two atomic bombs with the stolen product, so the secret services are understandably extremely busy. [Text] [LD061758 Paris Domestic Service in French 1700 GMT 6 Nov 79 LD]

CSO: 5100

GOVERNMENT DENIES PRESS REPORTS OF URANIUM DISAPPEARANCE

AB091520 Niamey Domestic Service in French 1200 GMT 9 Nov 79 AB

[Niger Government communique; read by Information Minister Mahamadou Halilou--live]

[Text] The Niger Government has issued the following communique: Some press organs recently published a report which resembles a detective story.

According to the report, consignments of uranium concentrate often disappear on the way to their destination and finally find their way to Libya and Pakistan. These allegations would not have been worth denying but for the fact that they tend to make people believe that Niger is incapable of normally exploiting and shipping its underground products abroad. The motive is perfectly (?clear).

First of all, despite the installation of ultramodern ore treatment factories at Arli and (Akoson), Niger produces only uranium concentrates and not enriched uranium. The ambiguity of these press reports must be completely cleared away; ore concentrate is not enriched ore. Only very few countries are capable of producing enriched ore.

Secondly, the transportation of the uranium concentrate from Arli, where it is produced, to the port of Cotonou has been entrusted to the Niger national transport company, SNTN. This is a mixed economy company whose remarkable organization has failed only twice. There were two road accidents; one on the road to Birni-Koni some 400 kilometers from Niamey, and the other not far from Zinder, during the rainy season in August this year. According to the report of the competent authorities, the ore was gathered, rebagged and transported to Cotonou. Zinder and Birni-Koni are not on the border with Libya, as (?alleged).

Thirdly, Niger has 33 percent of the capital of the (SOMAI) and 31 percent of that of the (COMINAC), the companies producing uranium at Arli. This gives us the right to quantities of ore corresponding to the same percentage of total production for our own sale. On many occasions, the government has stated that under the present circumstances, and in view of its inability to adopt a more active energy policy, it will continue to consider the uranium extracted from its soil not as a strategic product but as an export product. This decision is dictated by reason and circumstances.

Niger, which sells its uranium through an appropriate state organization called (ONAREM) and which is a member of the International Atomic Energy Agency [IAEA], conducts its commercial transactions within the strict framework of the rules laid down by (EURATOM) for its European partners and those laid down by (?IAEA) for all the other buyers. The consignments sold to some buyers who are not far from Niger were shipped out by plane from Agades Airport. This is not a secret to anyone. It is (?pure) imagination to say that a big truck had overturned on its way to Libya [few words indistinct] and was seen by Senoussi nomads. This was only a note added to the decor of the scenery in order to strengthen the thesis that uranium had been sold to Libya.

It may be necessary to recall here the following elementary facts: The uranium ore market is fundamentally free. Any (?buyer) of this raw material knows that he can get it nearly everywhere in the world. Up till now, the main condition is to accept the principle of control by the hierarchy. Everyone also knows that today any country is in a position to obtain uranium concentrate without buying it from Niger [few words indistinct].

Fourthly, the secret services of the big powers--which are often supported by international Zionism--seem to be speculating concerning the future of the Arli uranium deposits. They are worried about the destination of the products from Arli. Although this is understandable in view of the provisions of the treaty of nonproliferation of nuclear weapons, their haste in trying to give lessons, especially by creating false events, is an intolerable interference in the internal affairs of the Republic of Niger. [as heard] The government cannot tolerate this [few words indistinct].

To conclude, the government wishes to recall that the Arli uranium deposits are the exclusive property of the Niger Republic and that it cannot be otherwise.

Therefore, there can be no question of [words indistinct] or of bargaining over Niger's right to exercise sovereignty over its national heritage. Niger reaffirms its policy of nonalignment, of search for peace and of maintenance of international security in conformity with the spirit of the charters of the Organization of African Unity and the United Nations. It will continue to conduct a fraternal and active policy of goodneighborliness in its relations with neighboring countries; internally, it will establish a development company in conformity with the intrinsic interests of the Niger people.

CSO: 5100

ACADEMICIAN ALEKSANDROV DISCUSSES NUCLEAR POWER IN USSR

LD151451 Madrid YA in Spanish 27 Oct 79 pp 30-31 LD

[Part 1 of Jose V. Colchero undated interview in Moscow with President of the USSR Academy of Sciences Anatoliy Aleksandrov: "Soviet Union Will Replace Oil and Gas by Nuclear Power"]

[Text] [Question] What is the importance to the Soviet Union of nuclear energy for peaceful purposes? What is the attitude here on exploiting this kind of energy for the USSR's economic development?

[Answer] We started using nuclear energy for peaceful purposes a quarter of a century ago. We took the first step in the city of Obninsk, 100 km from Moscow, with the first nuclear power station, rated at 5,000 kw, which is still working today. Since then many more power stations have been built and their power output has been increased. At present nuclear power stations supplying approximately five percent of the energy consumed in the USSR. In the not-too-distant future we will generate in the nuclear power stations in the European area of the Soviet Union about 20 percent of our requirements and by the year 2000 some 30 percent of energy consumption this side of the Urals will be met by nuclear power stations.

[Question] Why do you say the European part of the USSR?

Is it because Siberia, with the hydroelectric wealth produced by the dams on its great rivers, does not need nuclear power stations?

[Answer] In the European part the traditional energy sources--coal, gas and oil--are gradually being exhausted. We have to bring the oil and gas from Siberia. It is for this very reason that nuclear energy is more economic in the European part.

Nuclear Energy

[Question] Could one infer from this that the Soviet Union regards nuclear energy as an auxiliary for all the other forms of energy?

[Answer] No, not an auxiliary. The Soviet Union plans to replace the use of oil and gas with nuclear energy.

[Question] Would you kindly explain to me how this process will take place?

[Answer] You see, on the one hand we are developing nuclear energy to obtain electricity and on the other hand for heating, which as you will realize, given the coldness of our climate, will mean considerable savings in other forms of energy. Furthermore, our view of urban development is suited to these kinds of long-distance nuclear heating. In the United States, for instance, the populations of the major cities usually live scattered in detached houses on the outskirts and there they use a great deal of electrical energy on heating and other domestic uses. We are going to use nuclear energy, not just for heating homes, but also for other purposes, such as a central hot water supply. The majority of the Soviet population lives in major urban centers such as Moscow, Leningrad, Kiev, Novosibirsk, and so forth, and heating there is very centralized. The use of nuclear energy for that purpose is three times more economic, cheaper, than electricity.

[Question] So when are you going to start using nuclear energy to heat buildings?

[Answer] We have already started although we have only taken the first step. For instance, near Voronezh there is a very large nuclear power station, and part of the energy it produces will be used for heating the city, which has 600,000 inhabitants. Voronezh's climate is very like that of Moscow, which is 600 km away.

Economical and Necessary

[Question] If and when you discover a method for transmitting without leakage the cheap energy obtained from the great Siberian rivers, through high tension cables or otherwise, will nuclear energy still be economic and necessary or will the hydroelectric energy be more advantageous?

[Answer] Nuclear energy will not only continue to be economic but will also be necessary and, above all, will continue to be developed not only in the European part but throughout the USSR. In our energy plan we have envisaged two paths for increasing energy production, on the one hand by increasing the capacity of coal-fired power stations and on the other hand by producing nuclear energy. These plans would be mutually complementary and have the aim of replacing the use of oil. It is essential for the Soviet Union to carry out these plans, because although we have very abundant sources of oil and gas, they are finite. Therefore we must consider now what is going to happen in the 21st century. We must store oil and gas for the chemical industry and for other industries, for which they are indispensable, and not "squander" them on heating and electricity production.

Siberian Power Stations

[Question] But is the problem of transmitting Siberian hydroelectric energy to the European part of the USSR not an important one?

[Answer] Yes, of course it is important and it is at present transmitted across great distances by high tension cables although not as far as we would like and with considerable leakage. In the Soviet Union there is a unified energy plan and since the Siberian power stations are part of this system, in the European part we consume much of the energy produced there. Several Siberian power stations are also fired by coal extracted at ground level, so it is very cheap. Transmission leakage accounts for approximately a 15 percent loss, but nevertheless it is still economic. Siberia's hydroelectric power stations also produce cheap energy, although their output only supplies 4-5 percent of the total energy produced in the USSR. Consequently nuclear energy is much more important than hydroelectric energy--especially with a view to the future.

[Question] Professor Aleksandrov, what danger does nuclear power pose to the civilian population? Do you believe that these dangers can be faced or that it would be better to abandon the use of this kind of energy not only for bellicose purposes, but also for peaceful purposes?

[Answer] It is well known that during the process of uranium fusion certain highly radioactive elements, which remain dangerous for many years, are released. These elements are generated inside the reactor and remain in the used fuel, the waste material. World practice shows that it is very unlikely that a fracture could occur in the jacket of the reactor in which the radioactive elements are enclosed. Things are worse [es infimo] inside the power stations [sentence as published]. As the nuclear fuel is transformed several more highly radioactive elements are also released. At present the reactors use uranium 238, which decays and yields plutonium but the residue can also be treated to obtain other elements. In general terms, the fuel to be transformed contains approximately equal amounts of plutonium and uranium residue.

Nuclear Reactors

[Question] Let us specify what the risks are. Could a reactor explode and cause damage similar to that of a nuclear bomb?

[Answer] Reactors are so constructed that the risk of explosion is ruled out from the outset. Highly resistant materials, resistant even to very prolonged radiation, are employed. To prevent such results, special monitoring is used in constructing reactors in Soviet factories specifically with the aim of guaranteeing the quality of bonding materials together. Even x-rays are used. And apart from the ministries responsible for constructing reactors there are other state bodies which monitor the work. Furthermore, while the reactors are functioning, these bodies carefully monitor every part of the system. And in the event of any fault emerging the entire power station is automatically shut down. Automatic measures are also taken to cool the contaminated area of the reactor. All these safety systems have been installed in duplicate and are also served by separate electrical supply circuits so that they are not put out of action by an energy shut-off. The system is so constructed that if any one element fails it does not imply the failure of the remainder. With regard to whether a reactor could explode like a bomb, I must state that it is impossible. It is entirely out of the question. I am also completely sure that a reactor entails no particular danger for a nearby city.

[Question] But what if a radiation leak occurs, perhaps not through a technical fault, but through a human error?

[Answer] This can happen. When reactors are built one proceeds from the assumption that a fault could occur in its functioning. The scale of any breakdowns is predetermined, therefore. For instance, throughout the world an unexpected fissure in the primary coolant circuit [tubo del primer contorno] is regarded as one of the most serious accidents. Although the likelihood of such a fissure is very small, if one does occur, the first thing that must be done is to cool the active area; second, condense the power station's steam to prevent it entering the atmosphere. The entire area where the reactor is housed is equipped with this special condenser. This is done both in American and in our own power stations. Here in the Soviet Union we pass all this steam through the tube submerged in water so that it condenses.

INTERNATIONAL AFFAIRS

FRG TO COOPERATE IN BUILDING FIRST NUCLEAR POWER STATION

TA152300 Ankara Domestic Service in Turkish 1600 GMT 14 Nov 79 TA

[Text] A Turkish-FRG agreement on principles for mutual cooperation for obtaining energy from sources other than oil has been concluded following talks on this issue in Ankara. During the talks, Turkey and the FRG decided to cooperate on projects concerning the (Akkuyu) nuclear energy power station, on enriching the lignite in Afsin and Elbistan and on exploiting solar energy. Some 20 million tons of low [as heard] lignite will be produced and consumed at the Afsin-Elbistan installations composed of a thermal power station and briquette production units. The projects will cost some 21 billion liras of which \$200 million will be paid in foreign currency.

The (Akkuyu) nuclear power station, whose first 660-megawatt unit will be operational in 1987, will be the first of its kind in Turkey. The nuclear power station, when concluded in 1997, will produce an electrical energy of 5,500 megawatts. The project also includes the construction of installations for enriching the thorium reserves to be used at the (Akkuyu) nuclear power station near Anamur, the training of personnel to be employed at the power station and measures to be taken against nuclear leaks.

The solar energy section of the cooperation agreement between Turkey and the FRG for obtaining energy from sources other than oil deals with two major issues. The first is exploiting solar energy for heating houses and the second is exploiting solar energy for securing salt and [word indistinct] from flowing and stagnant waters through distillation. At the talks it was also decided that Turkey would inform the FRG on power stations it will build in the future.

CSO: 5100

FRANCE

BARRE STRESSES IMPORTANCE OF NUCLEAR POWER INDUSTRY

LD121448 Paris Domestic Service in French 1200 GMT 12 Nov 79 LD

[Text] Beware of disaster, Mr Raymond Barre has warned the OPEC countries. Addressing recipients of prizes in a competition in energy saving organized by the daily LES ECHOS, the prime minister was quite clear: If all the producing and consuming countries do not show an exceptionally high spirit of responsibility in the present circumstances, the world could be heading for disaster--and I am weighing my words carefully, he added. Therefore, it is imperative and absolutely necessary to develop other sources of energy. As far as the prime minister is concerned, the first priority is the nuclear industry:

[Begin Barre recording] In 1979, the production of electricity at nuclear powerplants amounted to the equivalent of 8 million tons of oil and 8 million tons of oil equals nearly one-half of our consumption of fuel. This production will gradually grow in the coming years and will reach the equivalent of 43 million tons of oil in 1985. Electricity produced at nuclear powerplants will therefore progressively allow the restriction on the use of oil for more important and specific purposes such as transport, and chemical industry.

French electronuclear policy has national priority. The government will implement it without hesitation and unflinchingly. [end recording]

CSO: 5100

NUCLEAR BOMBERS TO BE DEPLOYED TO MEDITERRANEAN

LD050943 Paris LE FIGARO in French 20 Oct 79 p 6 LD

[Serge Brosselin report: "New Nuclear Squadron at Istres"]

[Text] Next year the air force will create an additional squadron equipped with tactical nuclear combat aircraft. The decision to create such a unit, which in 1980 will become the fifth squadron equipped with nuclear arms at the disposal of the tactical air force command, was announced by Defense Minister Yvon Bourges to members of the National Assembly Defense Commission on 18 September. Furthermore, the air force General Staff has explained that this Jaguar-equipped unit will be stationed at the Istres Air Base in southeast France.

Until the end of last year the tactical air force, which includes some three-fourths of all the combat aircraft deployed by the French Air Force, was mainly stationed in eastern France, on the territory of the first air region.

Even though the creation of a Jaguar squadron to be stationed at the Bordeaux-Mérignac Air Base at the beginning of the year is consistent with the need to strengthen defense along the Atlantic coasts and the country's southern flank, the deployment for the first time ever of a unit entrusted with the task of launching tactical nuclear arms outside the territory of the first air region assumes a very special significance.

In fact, the topics fixed by the General Staff in the past 2 years for the 1978-1979 Dater air defense exercises made it absolutely clear that, as far as the General Staff is concerned, the defense of the Mediterranean front is becoming as important a priority as the protection of the country's northeast borders.

The deployment of 15 new Jaguar aircraft equipped with tactical nuclear arms at the very base where Boeing C-135-F stratotankers are stationed would make it possible very rapidly to issue a nuclear warning to any enemy forces operating in the Mediterranean without redeploying any aircraft from bases in the northeast region.

CSO: 5100

POLL REVEALS DUTCH FEAR NUCLEAR ENERGY

Population Polled

Amsterdam ELSEVIERS WEEKBLAD in Dutch 20 Oct 79 pp 1, 16

[Article: "Dutch Afraid of Nuclear Energy"]

[Text] Nuclear energy? The average Dutch citizen does not regard this as advisable. It is not being considered as the most appropriate source of energy for our country. First of all let us just reopen our coal mines, stop exporting our natural gas and develop new energy sources. For the time being nuclear energy is the last choice. This is the strong impression which can be derived from the "Energy Problem" inquiry conducted on orders from ELSEVIERS WEEKBLAD as a contribution to the "broad social discussion" being prepared by the government.

A representative group of 572 Dutch persons were opinion polled for their views and concern in matters of energy problems. On a short-term basis we do not see any serious problems in our country with regard to the supply of energy; however, on a somewhat longer term, energy problems could lead to diminished prosperity. Moreover, the Dutch people do not want a reduction of spendable income for the sake of unrestrained energy procurement.

Savings on energy can be attained only if the government comes up with legal measures, meaning a majority.

For a majority of the Dutch people nuclear energy is a last resort. It is a known fact that they do not see a good reason for it and they prefer a wait-and-see attitude with respect to nuclear energy. It would be better to reopen the coal mines first of all.

Only a minority expects any serious difficulties in the area of energy; however, over a considerably longer period pessimism does increase. A shortage of energy will have an unfavorable effect on prosperity.

The Dutch citizen is not thinking in terms of a reduction of his spendable income for the sake of being assured of an unlimited energy supply. Energy

may well be costing more and the alternative is that its production will be coupled with many risks.

A large majority is of the opinion that energy conservation is attainable only by government enforcement.

The government's information on energy policy does not measure up to what it should and the government's policy in the field of nuclear energy is being judged very negatively.

The foregoing are some of the most important results of an inquiry on the "energy problem" which was conducted at the request of ELSEVIERS WEEKBLAD by the National Association of the Netherland Institute for Statistics. During the last week of August and the first week of September a representative group of 572 Dutch citizens (above 18 years of age) were questioned about the present energy questions and their concern in this matter. Each of the interviews lasted about 45 minutes.

The order for the interview was given in the framework of the symposium "Energy What Now?" which took place on Monday 22 October under the auspices of ELSEVIERS WEEKBLAD (Tropeninstituut, Amsterdam; See also page 9). At the same time, through this inquiry, ELSEVIERS WEEKBLAD wants to make a contribution to the "broad social discussion" over the application of nuclear energy which the government wants to start fairly soon. The ELSEVIERS WEEKBLAD editorial staff intends to continue this discussion by instituting more followup inquiries.

Opening of Coal Mines

Amsterdam ELSEVIERS WEEKBLAD in Dutch 20 Oct 79 pp 16, 17

[Article by Jan van den Beld: "Reopen the Mines, Then Apply Nuclear Energy"]

[Text] Six years after a carefree utilization of energy definitely came to an end. The average Dutch citizen has risen to the task of adding his opinion with respect to the concerns regarding one of the vital conditions of the Western world. Whereas previously energy was no greater problem than water or air, it now matches up to other social problems such as unemployment. The researchers of the National Association of the Netherlands Institute for Statistics have looked into the energy question together with the problems of income leveling, welfare facilities, the environment and unemployment with respect to awareness, realization and involvement. From this they have come to the conclusion that among the people they questioned, interest in energy matters had higher priority than unemployment (and the other three subjects), although knowledge with respect to unemployment surpassed knowledge about the energy question. The energy problem, therefore, is clearly a matter of interest to the people of Holland and this is always a good basis for the further studies of the opinions, preferences and feelings which exist in this respect. Not everybody who is well informed on the problem is otherwise as closely involved. For example, higher social classes and followers of the People's Party for Freedom and Democracy are strongly interested in energy, but their emotional involvement in this question is lower than it is among the average person questioned.

The object of the inquiry was to examine in consecutive fashion the difficulties which are expected in the field of energy on a short and long term, the causes of these energy problems, which energy sources are to be given preference for Holland, what is the attitude of the people with respect to nuclear energy and new energy sources still to be developed, what measures are necessary for the restriction of energy use and for the uninterrupted supply of energy. The extensive questioning concluded with opinion polling over "the broad social discussion" of the government's information on energy, the attitude on the demonstration against the government's measures regarding nuclear energy and finally over opinions with respect to the government's energy policy.

Two separate questions: Are serious energy difficulties expected in Holland during the next six months? and: What about in five years? With respect to the longer time range those questioned gave clear evidence of greater pessimism than they did for the short range and we noted that the percentage jumped from 22 to 60. One person out of five thus expects serious difficulties in six months.

Price Increases

Out of nine possible problems resulting from energy shortages, those questioned could run through their expectations for both the short and long terms. Most of them are in agreement with respect to further energy-price increases within a short period. It is not expected that the current rates of supply will be held up, but with regard to a shortage of gasoline, people do not hesitate at all in saying "probably" (26 percent) or "perhaps" (31 percent).

Government measures could evoke internal political tensions. About 25 percent of those polled are sure about this. One out of four is convinced that the energy situation will lead to reduced prosperity.

Political problems in and with countries which supply energy products are regarded by those questioned as the most important cause of the present energy problems. Nine possible causes were presented to them as options and they indicated the second cause as being the raising of prices by the energy-supplying countries. The policy of shortages by oil concerns wanting to use this as a means of getting high prices takes third place in the order of the causes. The consumer is just about in fourth place and he is blamed for the wastefulness in industrial countries. What seems to take last place as a cause is the failure to switch over to nuclear energy in time. The opinions of those questioned were so shaded that all of the causes mentioned were quite often modified as being "partially true."

Those questioned were asked to classify oil, natural gas, coal and nuclear energy in accordance with five characteristics: "Scarcest," "most damaging to the environment," "most injurious to health," "leads to the highest energy price," and "is being given the most consideration with respect to Holland's energy procurements." Because of the harmful characteristics

attributed to nuclear energy (with the exception of "scarcity") logically it turns out that this source of energy is regarded as the least appropriate for Holland's energy procurements. The reverse is true with respect to natural gas, according to the opinions of those questioned: to be sure it is scarcer than nuclear energy, but not as scarce as coal and petroleum. Moreover, it is the least harmful and not any more expensive than coal or oil. On the basis of all this, people regard natural gas as the thing to be given the most consideration for our country.

Negative

A negative opinion on nuclear energy has, therefore, been quite clearly expressed in the foregoing. However, this opinion is not shared by everyone to the same extent; thus younger people are more inclined toward nuclear energy than older persons and this despite the fact that they see things more clearly with respect to the risks from this source of energy. The more educated and the followers of the Democrats-66 Party stood by their preference for nuclear energy in Holland to the same degree as the young people. On the other hand, followers of the People's Party for Freedom and Democracy appear to be strictly nuclear energy men. In comparison with the others, they have a very outspoken preference for it. As for the negative side, the high costs and the relative scarcity of this source of energy speak far more than the harmfulness to the environment. Among the followers of the Labor Party there are very few who hold the view that nuclear energy is "the most appropriate for Holland." Christian Democratic Action followers take just about the same stand as all the other persons questioned.

Confidence

Those questioned are counting a great deal on new sources of energy (sun, wind, tides or energy from vegetable matter). More than half of them (56 percent) are of the opinion that these alternatives will be able to provide an important contribution to Holland's energy procurement within ten years. Among the followers of the Democrats-66 Party this sort of confidence is much stronger (72 percent) and two out of three middle-aged persons have confidence in this also. Persons associated with the People's Party for Freedom and Democracy are somewhat reserved with respect to alternative sources of energy. On the other hand, those persons who strongly emphasize the dangers of nuclear energy also put a lot of trust in new sources of energy.

Out of the energy problems arranged in pairs, persons questioned were allowed to make a choice (state their preference) out of the sets of two. The conclusion drawn from this is that, among other things, seven out of ten picked scarcity over higher costs (which is a rather absurd alternative); eight out of ten picked scarcity over the risk of accidents and a great number picked scarcity over the pollution of the environment. Nearly seven out of ten picked higher costs above risks. From one or another thing the investigators came to the conclusion that people regard scarcity as the least unacceptable thing resulting from energy measures, and this was followed by costs by a good distance, while the chance of an accident and pollution was regarded as most unacceptable.

Cutting down on road lighting, window shops and similar things and taking strong measures in home insulations are two energy-saving measures strongly emphasized by those queried. They had the choice of selecting from nine similar measures. Third place was given to restricting the use of the automobile. The least favorite appears to be the restriction of electric power industries. There appeared to be unanimity in putting an important increase in the price of energy without adjustment to incomes in last place.

The majority of the people questioned, moreover, quite readily suggested measures through which our country could assure itself of an uninterrupted supply of energy. Here too the possibility was provided for choosing from measures arranged in pairs so that the preference could stand out easily. Thus 70 percent stood by the choice of reopening the coal mines rather than developing nuclear energy and the construction of nuclear power stations. The development of alternative sources of energy appeared preferable to stronger control of the big oil companies. The preference for this latter choice is about as great as that of stopping the export of natural gas and of reopening the mines. Those questioned did not appear to take such a clear position as is the case with other Western countries' exercise of political pressure, and if necessary military pressure, on the OPEC countries. The thing which is clear even in this respect is that nuclear energy is the last choice.

Economize

If we go by what persons who were questioned are saying then there is something rather strange with respect to actual energy conservation by consumers. Only 4 percent of them are of the opinion that very many people will try to economize on the use of energy. No less than 68 percent maintain that the people who will do so are "very few." However, it appears to surprise everybody when those who were questioned spelled out what they themselves would do. Then it appears that 70 percent would do something about cutting down their own consumption of energy; 59 percent say that they have succeeded in doing so by using less light, lowering the heat, using fewer devices and finally by saving gasoline. The 30 to 44 age group made the most effort in putting up with this. Those who feel involved in the energy problem also appear to be the most zealous about the subject of economizing and at the same time they saw their zeal being rewarded by more than an average saving. According to what has been stated despite the almost general voluntary efforts at economizing and the success attained in this, less than one-third of those questioned are of the opinion that doing this on a voluntary basis will be sufficient. Among the optimists one finds a lot of Democrats-66 followers. According to 69 percent of those questioned, pressure from government regulations will be necessary for realizing a cut back in energy consumption.

Nuclear Energy: Last Resort

Amsterdam ELSEVIERS WEEKBLAD in Dutch 20 Oct 79 p 17

[Article by Jan van den Beld: "Nuclear Energy Policy Gets a Low Mark"]

[Text] Not more than one-quarter of the Dutch people are aware of the government's intention of unleashing a "broad social discussion" on nuclear energy, going by the ELSEVIERS WEEKBLAD inquiry on the "Energy Problem." It is not encouraging that nearly half of those questioned do not attach very much importance to such a discussion. One can gather from the inquiry that a wait-and-see attitude prevails with regard to nuclear energy.

In August, the Chamber received a note signed by four ministers dealing with this social discussion. The objective of the note was described as follows: "The social discussion should end up in a systematic recapitulation and evaluation of previously expressed concepts, facts and views for the benefit of decisionmaking by government and Parliament."

On 10 December, the Chamber Commission for Nuclear Energy will hold a public meeting in pursuance with the note. It was a part of the objective for forming a steering committee for attending the discussion process. It would carry through its task in two phases each lasting one year: an information phase and thereafter the actual discussions.

At the moment (going by the ELSEVIERS WEEKBLAD inquiry) those who attach little importance to the social discussion are still in the majority. Against their 47 percent there is 33 percent who consider the discussion as being of great interest, while 20 percent are still uncommitted. Between the young people and the Democrats-66ers the government and Parliament may now expect to have a majority behind them. On the other hand, among the followers of the People's Party for Freedom and Democracy there is a small majority that says that social discussion is of little significance.

The note states: "The question as to whether we should proceed to expand nuclear energy in Holland cannot be isolated from the general energy problem this being the course on which our country has set itself upon." Well it is a known fact that the guidance on the entire energy problem can be improved quite a lot. At this moment, by far most (62 percent) of those questioned are of the opinion that the government's information runs short of being adequate and only 25 percent assign an adequate mark to it.

Even the opinions regarding the policy with respect to nuclear energy are least flattering for the government. Negative characterizations such as indecisive, misleading, weak and lax are very frequently given to the nuclear energy policy. Still 20 percent of those questioned typified this policy with terms such as energetic, far-sighted, honest, democratic and frank.

Safeguards

The people participating in the inquiry were asked to state what, in their opinion, is the most desirable of a series of measures which the government could take or propose. The desirability of better legislation for safety of nuclear power plants took first place in this series (66 percent). This was followed immediately by: "Keeping the existing nuclear power plants in operation, but do not build new ones before the safety problem is resolved" (50 percent). The "proposal" for shutting down existing nuclear power plants and forbidding the building of new ones found favor with no more than 25 percent of the people participating in the inquiry. The suggestion of expanding the number of nuclear power plants as soon as possible was the very last choice (10 percent). From the listing of these desirabilities it becomes clear that a large portion of the public is taking a wait-and-see attitude with respect to nuclear energy. The proponents of direct action (closing down of nuclear power plants, on the one hand, and, on the other hand, expanding their number) always ended up in the minority.

Perhaps in connection with all this it is still surprising that demonstrations against nuclear energy are receiving a lot of sympathy. Nearly half approved of such demonstrations, but in addition there is also a small percentage "that might be behind this." In this respect, followers of the Labor Party and Democrats-66 Party are miles apart from followers of the People's Party for Freedom and Democracy (about 70 percent against 15 percent). We have already noted previously that People's Party for Freedom and Democracy followers have displayed a great deal of interest in the energy problem and have freely expressed their preference for nuclear energy, but at the same time they obviously display a slight (emotional) involvement in deemphasizing to some extent the dangers of nuclear energy.

7964

CSO: 5100

NUCLEAR POWER PLANT GOESGEN DYNAMITED

Zurich NEUE ZUERCHER ZEITUNG in German 6 Nov 79 p 15

[Article: "Explosive Attempt On the Nuclear Power Plant at Goesgen; High Steel Mast On the Grounds of the Nuclear Power Plant Blown Up"]

[Text] Goesgen-Daeniken SO, 4 November (sda). Unknown perpetrators attacked with explosives the nuclear power plant at Goesgen SO around 1:30 am on Saturday. They blew up the support of a 110-m high steel mast located outside the fenced-in reactor facility. The mast, which carried meteorological monitoring instruments, toppled onto a 400,000-V transformer installation, also located outside the nuclear power plant grounds, and partially destroyed it.

No injuries resulted from this attack. Property damage was set at 1 million Swiss francs by Dr Herrman Wisler, the director of the nuclear power plant, during an interview with the Depeschenagentur [SDA; Swiss news agency].

'A Loud Bang and a Shower of Sparks'

Eyewitnesses described the moment of the explosion as their being startled by a loud bang in the middle of the night. After that the whole area was lit up as bright as day, just as by lightning during a storm. A shower of sparks concluded the "fireworks," caused by short circuits. Then followed deep darkness, as power was knocked out for a prolonged period. The power outage lasted for up to three quarters of an hour in some areas.

The Solothurn canton police, who are investigating jointly with the scientific service of the Zurich city police, were, as of Sunday, still in the dark about the identity of the perpetrators. In order to carry out the investigative work without interference, the scene of the crime selected by the demolition commando was cordoned off until Saturday noon. On Saturday morning, the Division for Nuclear Power Plant Safety (ASK) assured themselves at the site that the attack did not endanger the population. In connection with this, Director Wisler told the SDA: "Immediately following the explosion, the reactor went automatically to a near-zero power-generating level, producing only what was needed on site." Wisler explained

further that the meteorology tower has no connection with the operation of the nuclear power plant and serves only to collect data (air humidity, wind velocity, precipitation).

On Sunday, crowds of tourists flocked to the grounds of the nuclear power plant at Goesgen; they came on foot and by vehicle to visit the area. But they found themselves partially cheated in their expectations: The riggers had made significant progress in the repair work. Power production was back to normal, according to an announcement by Aare-Tessin AG (Atel), as owner of the damaged 400,000-V switching station, and by the nuclear power plant Goesgen-Daeniken AG (Daeniken).

(ddp) Police and authorities were notified by the Goesgen Nuclear Power Plant and by Atel immediately after the act of sabotage, and an investigation was begun at once. During this investigation, Atel found out that again at Goesgen, as had been the case earlier during the criminal attack on the information pavilion at the construction site of the atomic plant at Kaiseraugst, the perpetrators had set up a sign on the access road reading "Stop--Blasting--Call Police."

A Letter From the Instigators

Bern, 4 November (sda). A "Do-it-yourself-group 007" has claimed credit for the attempt on the nuclear power plant Goesgen in a letter addressed to Bundesrat Willi Ritschard and delivered on Sunday to the daytime show of Swiss TV. The group explained that they blew up the steel mast on Saturday in protest against the commencement of commercial operation of the nuclear power plant. The letter, which starts with the appellation "Dear Willi," also contains serious accusations against the director of the Federal Department of Transportation, Communications and Energy, as well as threats of further attacks. The same group has also taken credit for the 1977 attack on the information pavilion at Kaiseraugst and for incendiary attacks on the private automobiles belonging to people at the nuclear power plant.

6948
CSO: 5100

END

END OF

FICHE

DATE FILMED

31 Dec

DD.